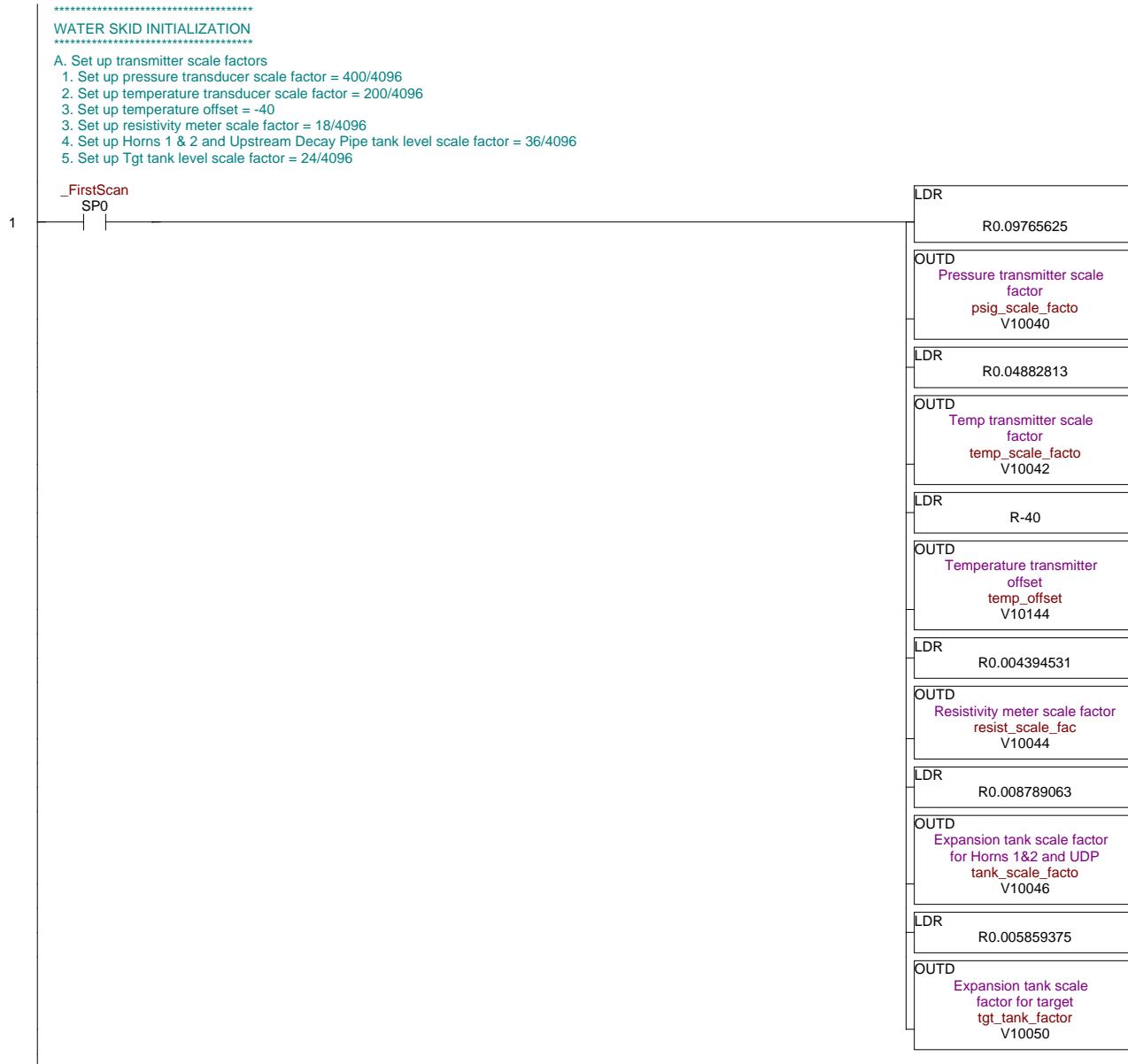


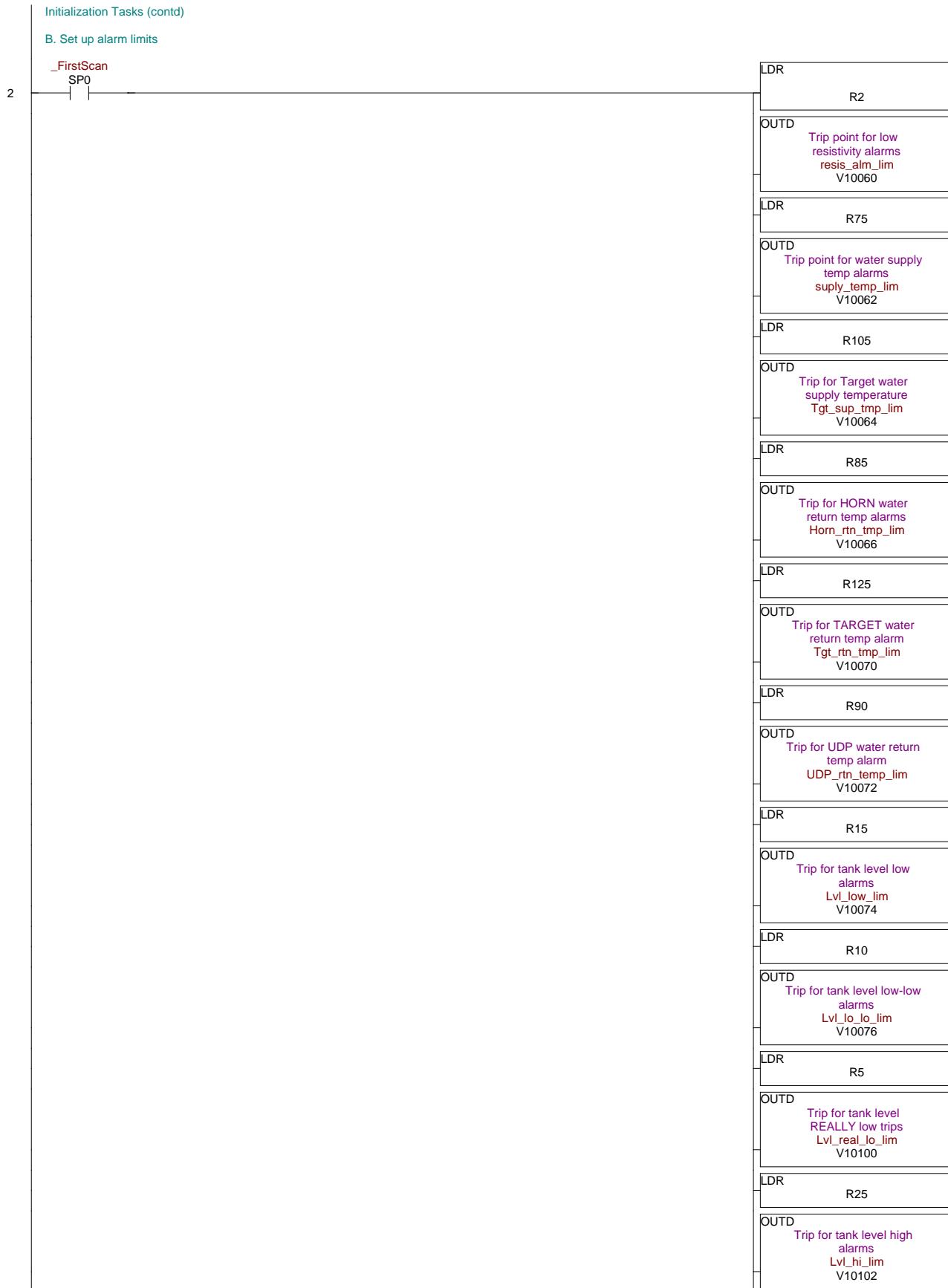
7/11/2006

450

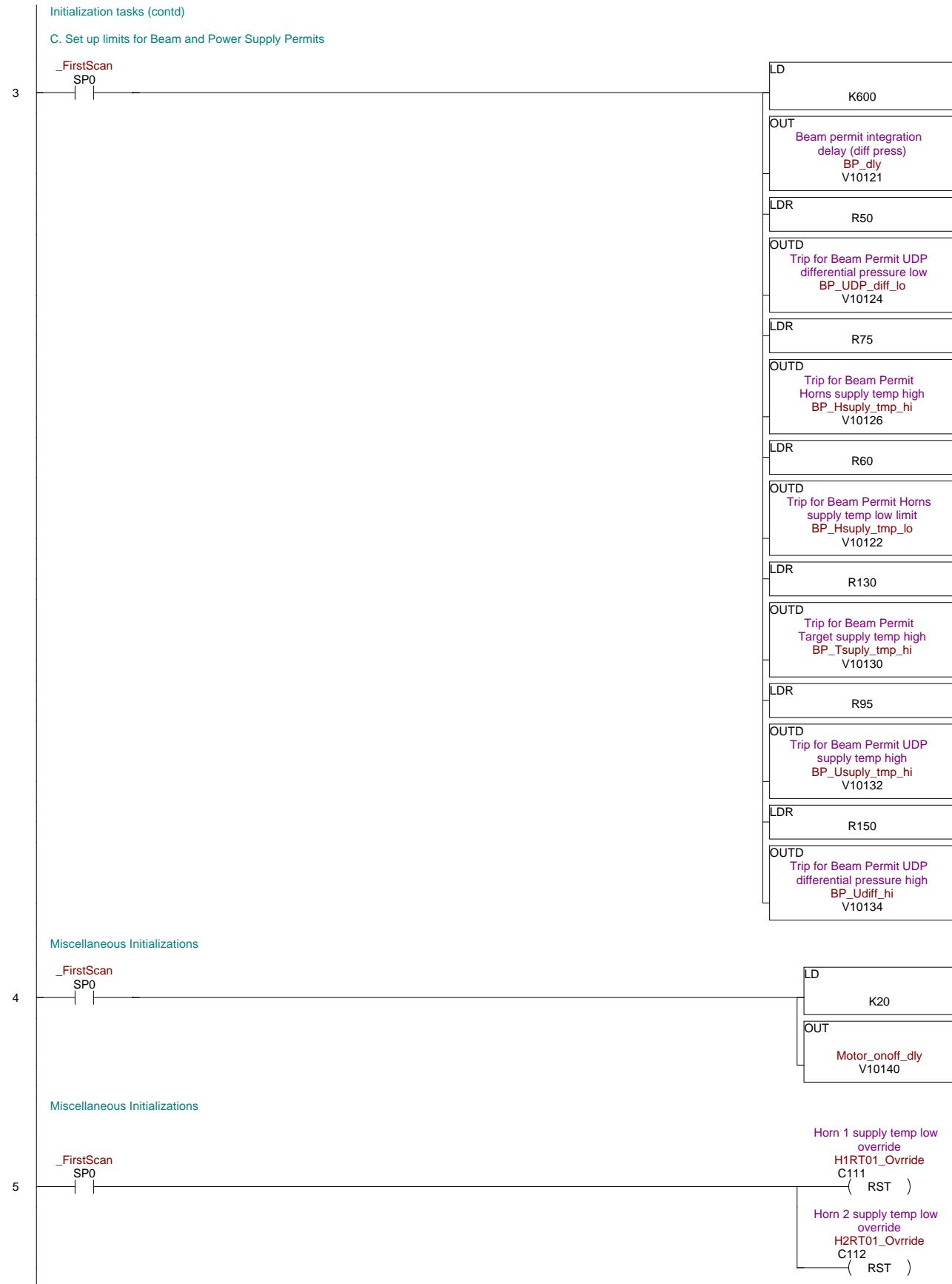
thsr_lcw

Path: c:\kasley\numi\thsrwair060606\thsr_lcw.prj
Save Date: 07/11/06 10:44:23
Creation Date: 04/12/06 08:54:19
PLC Type: 450
Class ID: DirectLogic 405 Series
Link Name: THSR-LCW
Description: NuMI Target Hall and Support Room (THSR) LCW PLC
Version: Issue O
Company: Fermi National Accelerator Laboratory, Batavia, IL
Department: Accelerator Controls / Systems Hardware Group
Programmer: Paul Kasley x8658

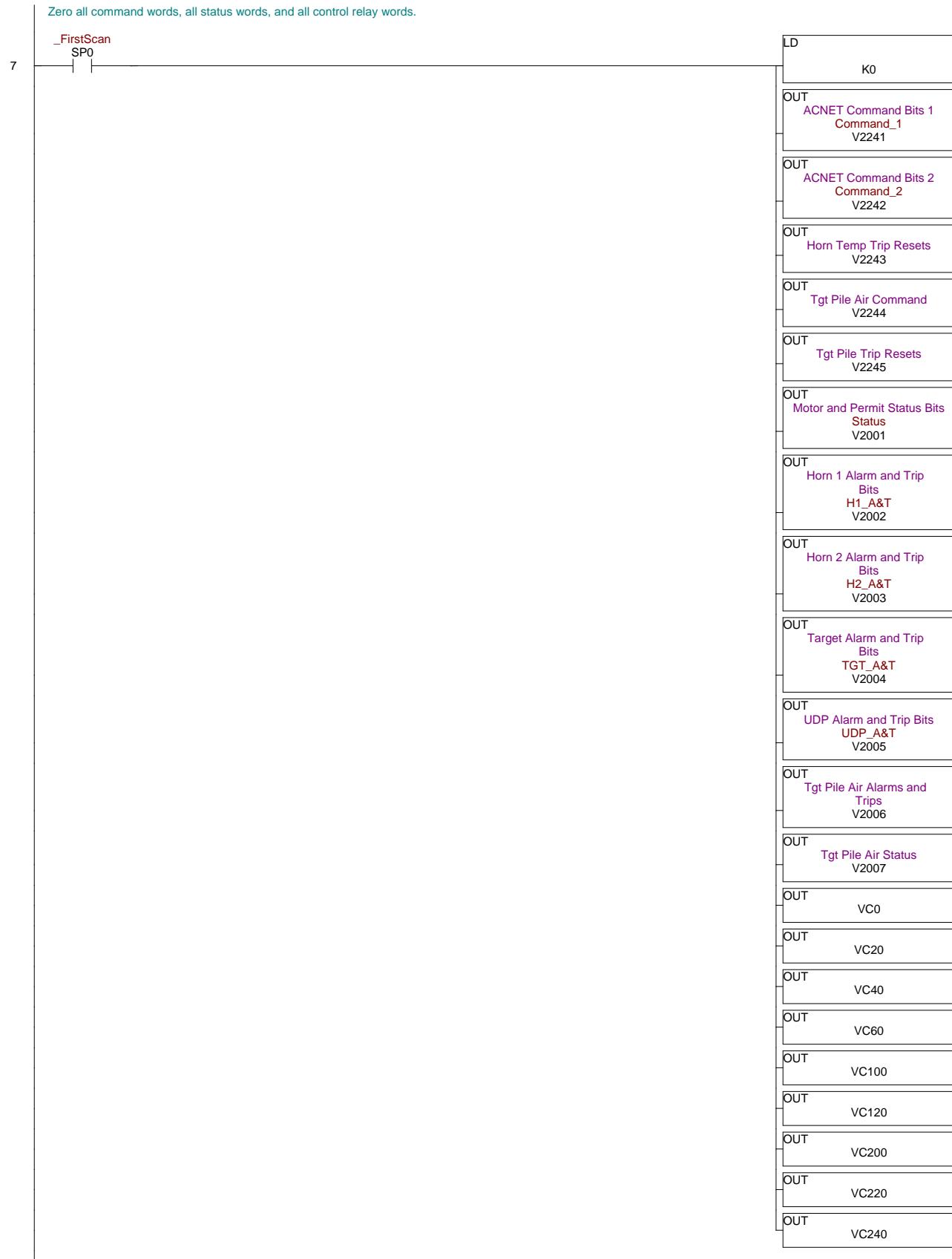


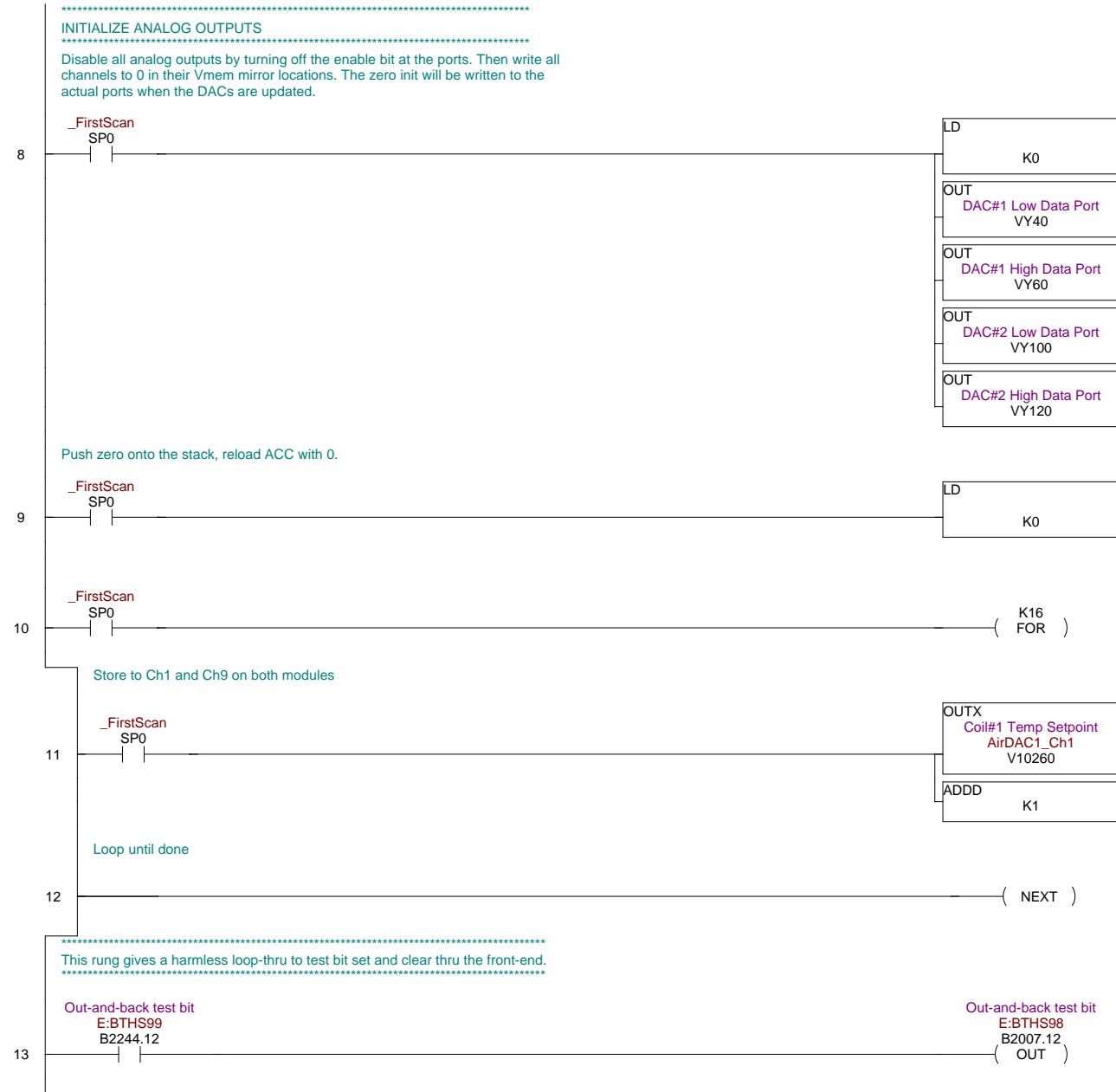


LDR	R20
OUTD	Trip for target tank level high alarm Tgt_tank_hi_lim V10136
LDR	R0
OUTD	Trip for tank air pressure low alarms Tank_Pres_lo_lim V10104
LDR	R5
OUTD	Trip for UDP tank air pressure low alarm UDP_air_lo_lim V10106
LDR	R0
OUTD	Trip for differential pressure low alarms Diff_pres_lo_lim V10110
LDR	R50
OUTD	Trip for UDP differential pressure low alarm UDP_diff_lo_lim V10112
LDR	R5
OUTD	Trip for filter differential pressure high alarms Diff_pres_hi_lim V10114
LDR	R150
OUTD	Trip for UDP differential pressure high alarm UDP_diff_hi_lim V10116
LD	K150
OUT	General alarm integration time Alm_dly V10120
LDR	R6
OUTD	Target tank low low limit Tgt_lolo_lim V10146









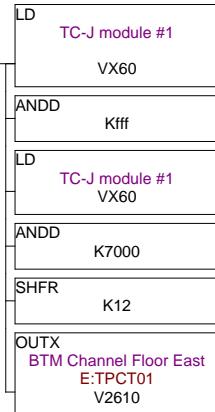
SCAN THERMOCOUPLES

On each scan, read one channel from each of the four Type J thermocouple modules on the first local expansion base. Store fahrenheit temperature values as binary data starting at V2610.

A complete scan of all 32 channels will take about 1/2 second. This should be plenty fast for anyone.

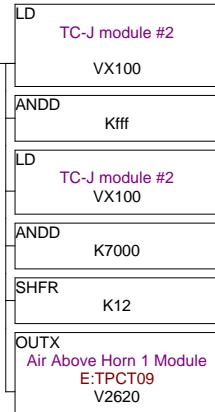
TJ module 1
First expansion base, slot 3

14

On
SP1

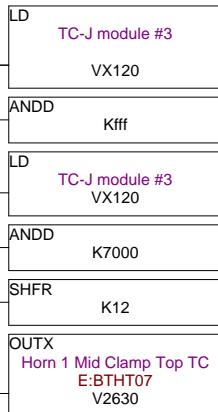
TJ module 2
First expansion base, slot 4

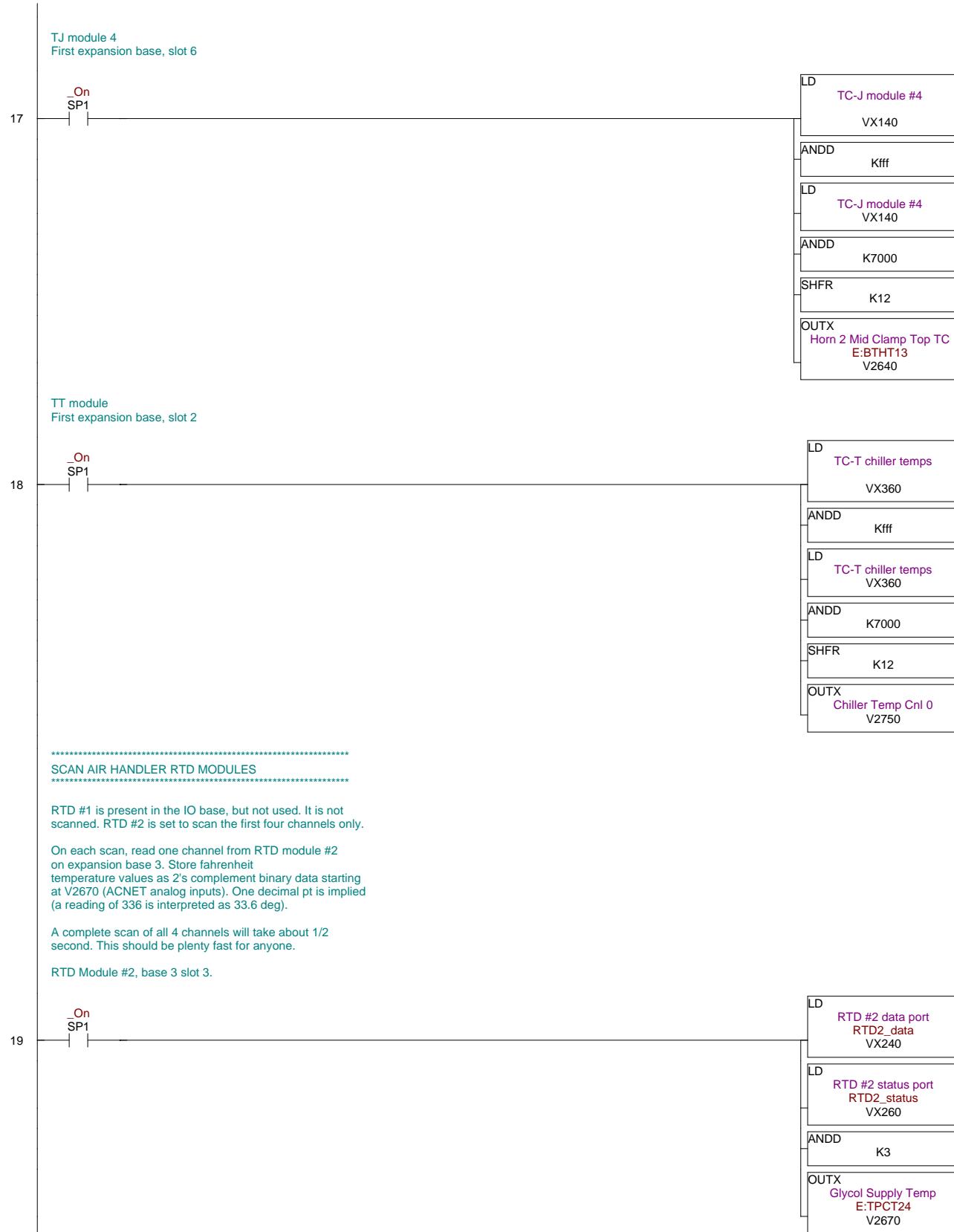
15

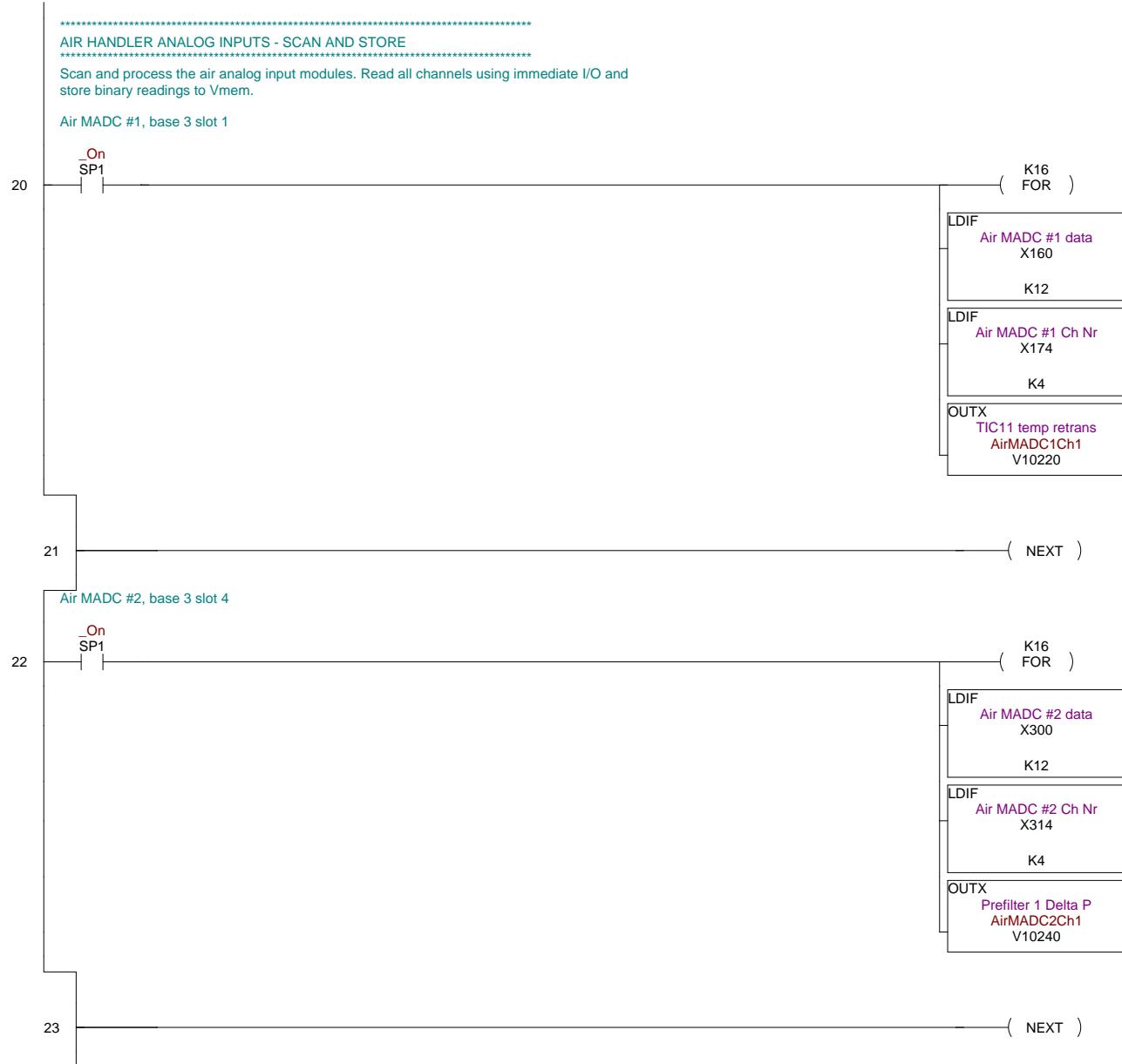
On
SP1

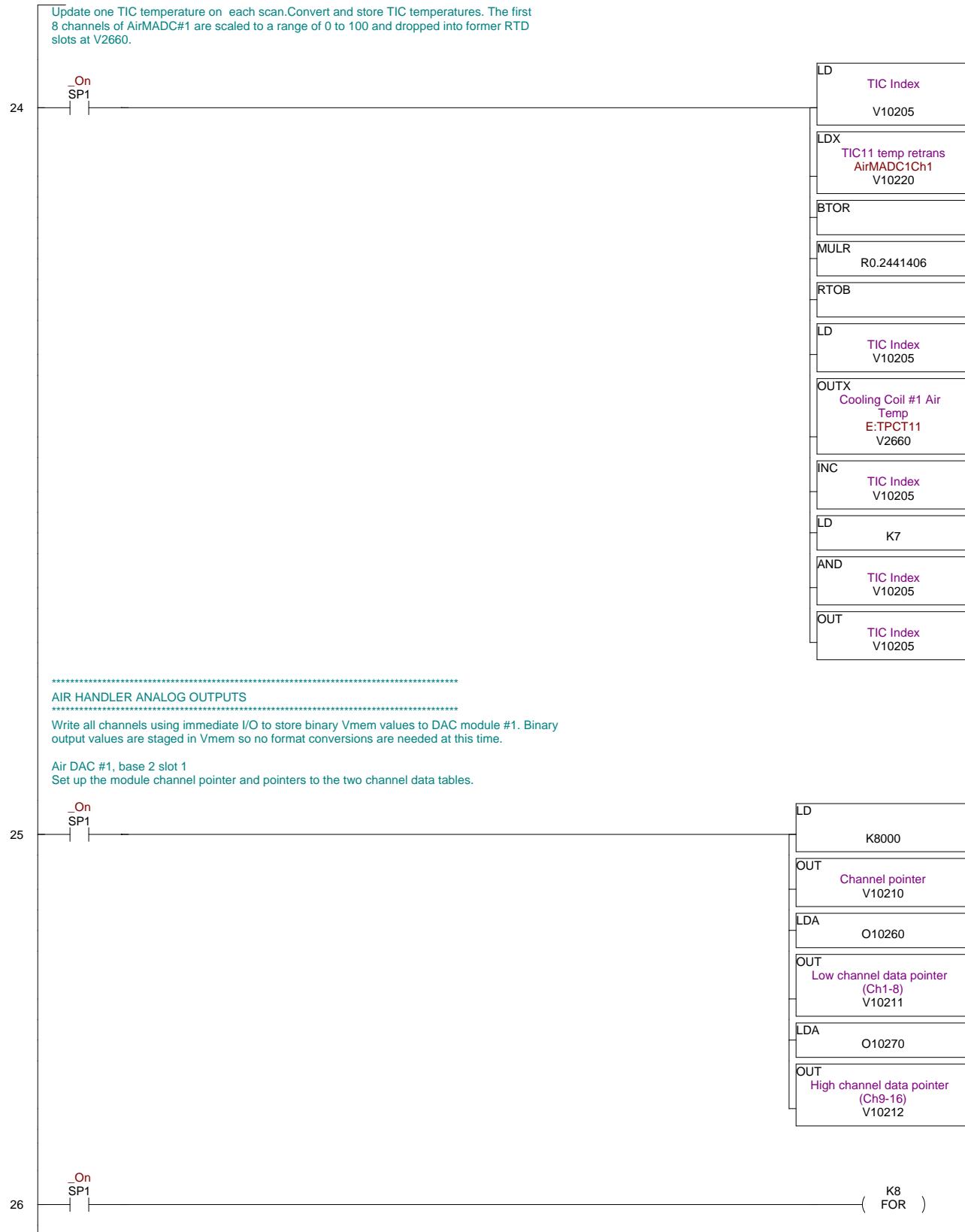
TJ module 3
First expansion base, slot 5

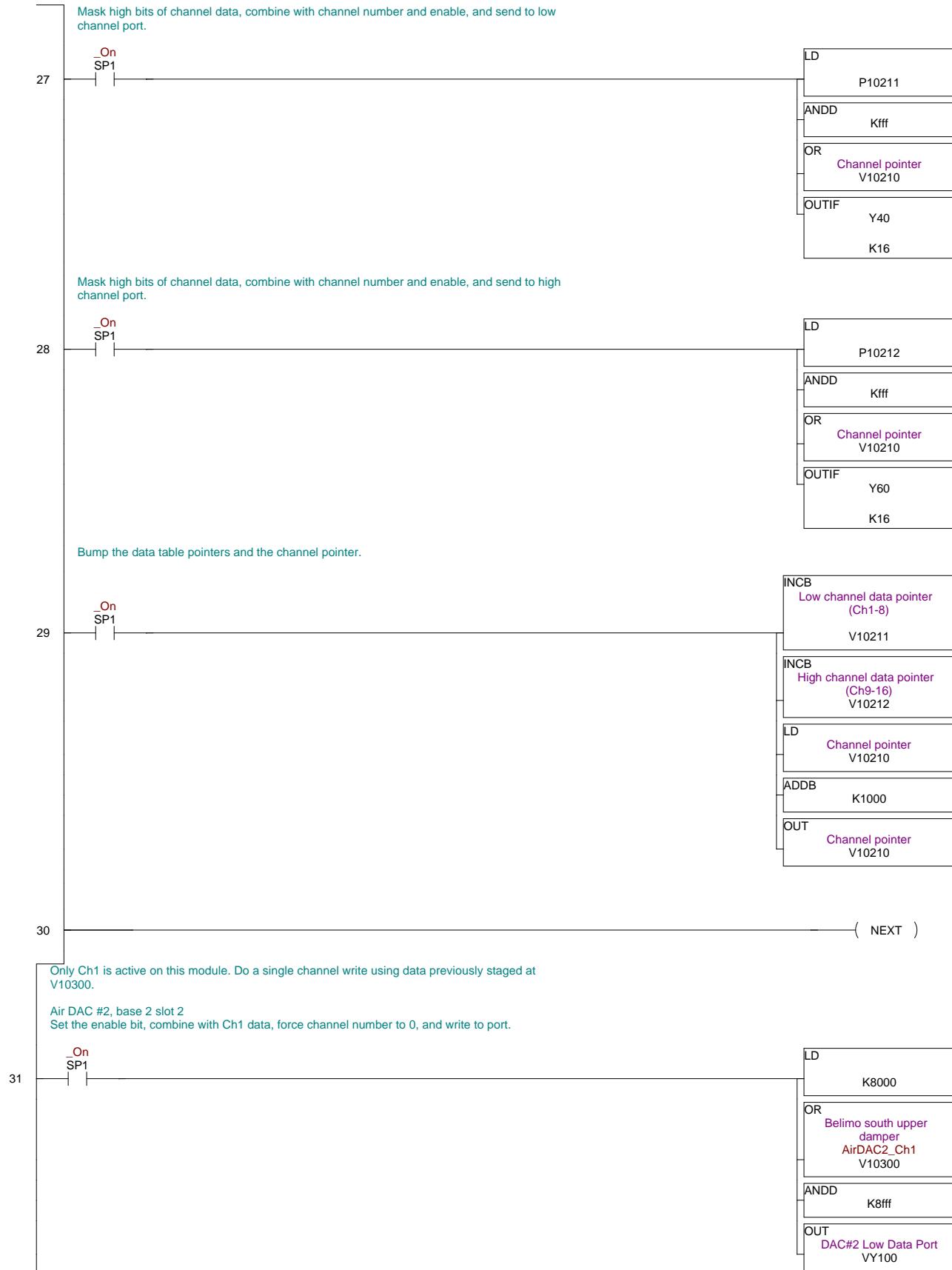
16

On
SP1

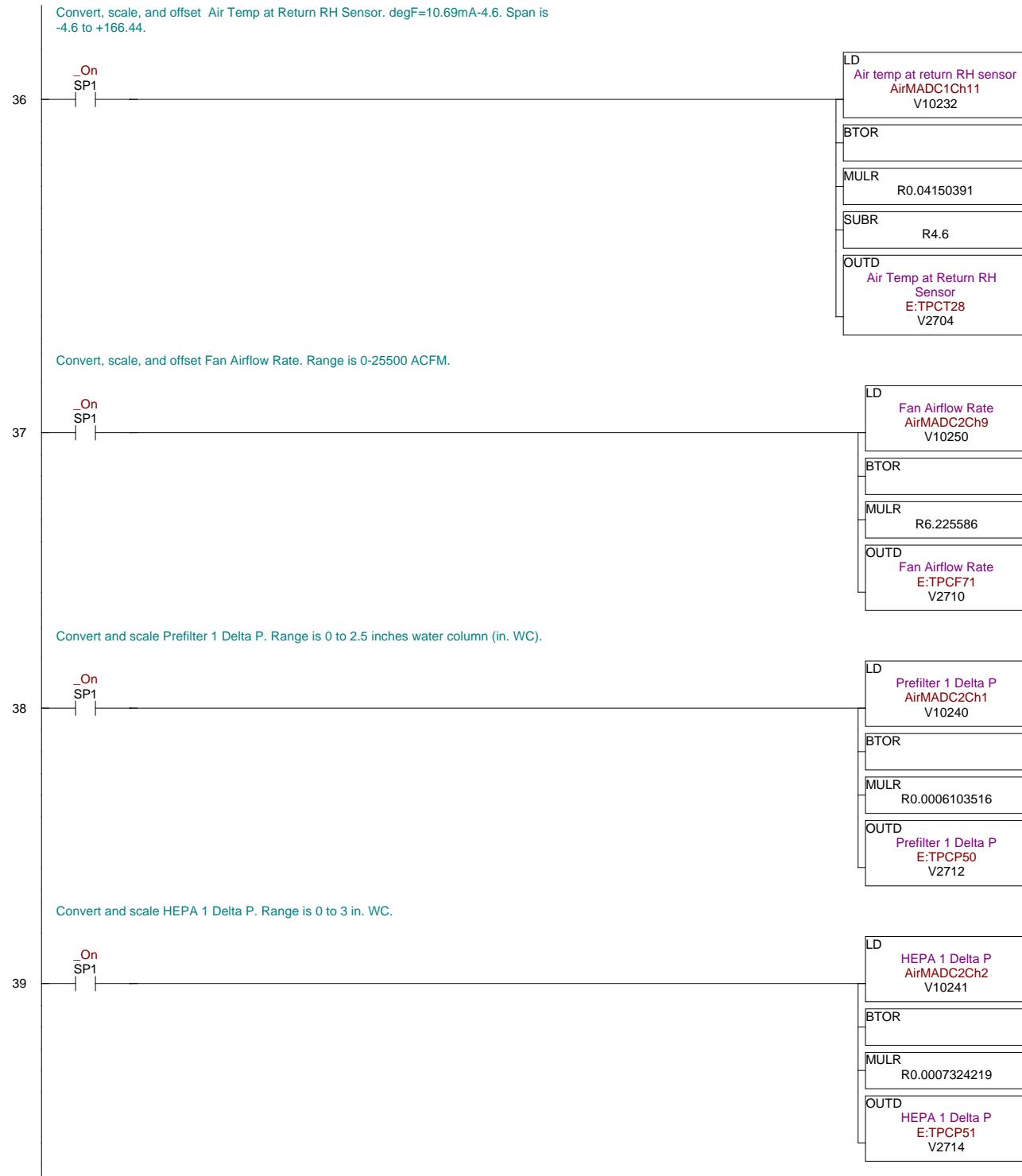






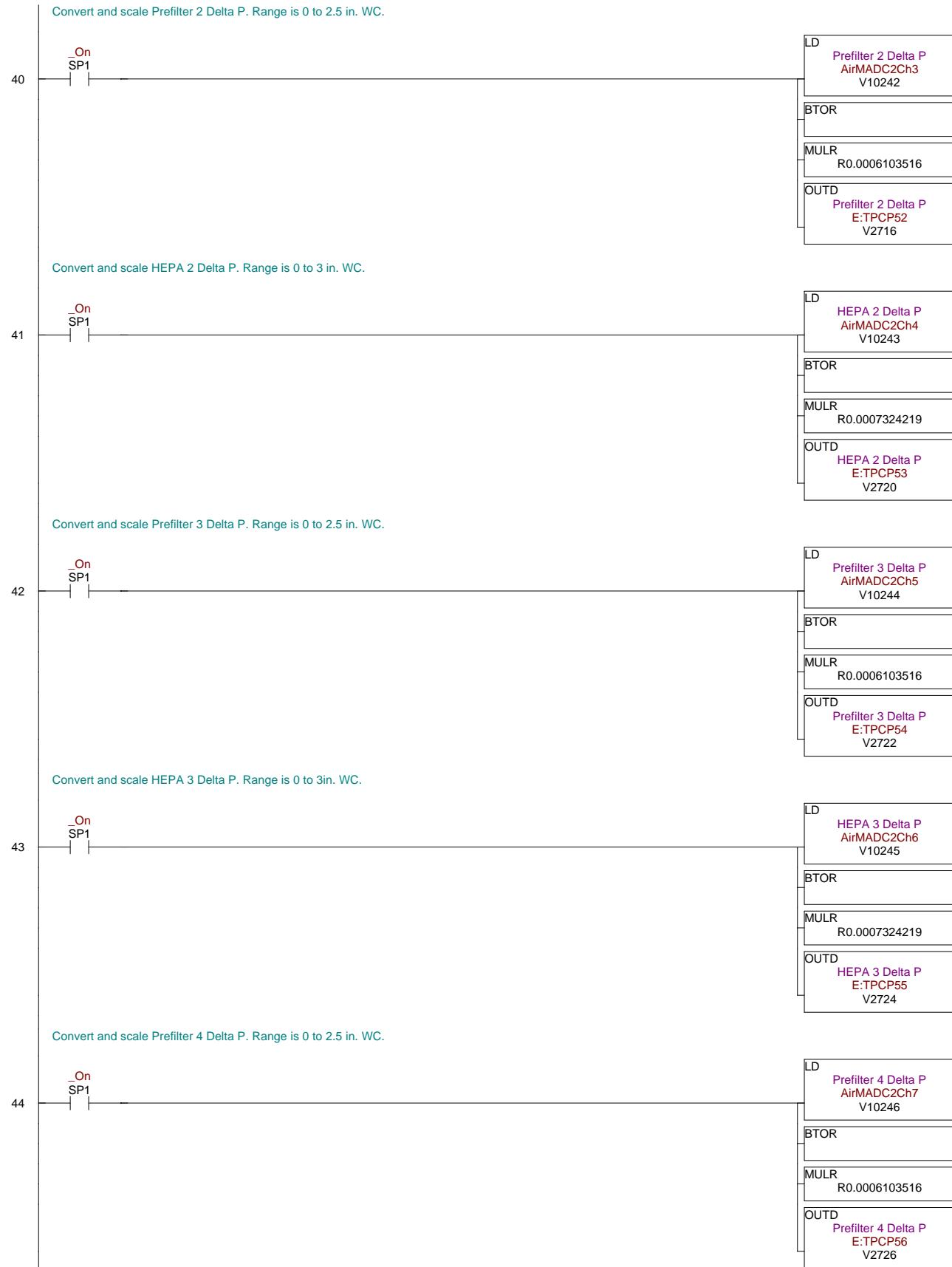


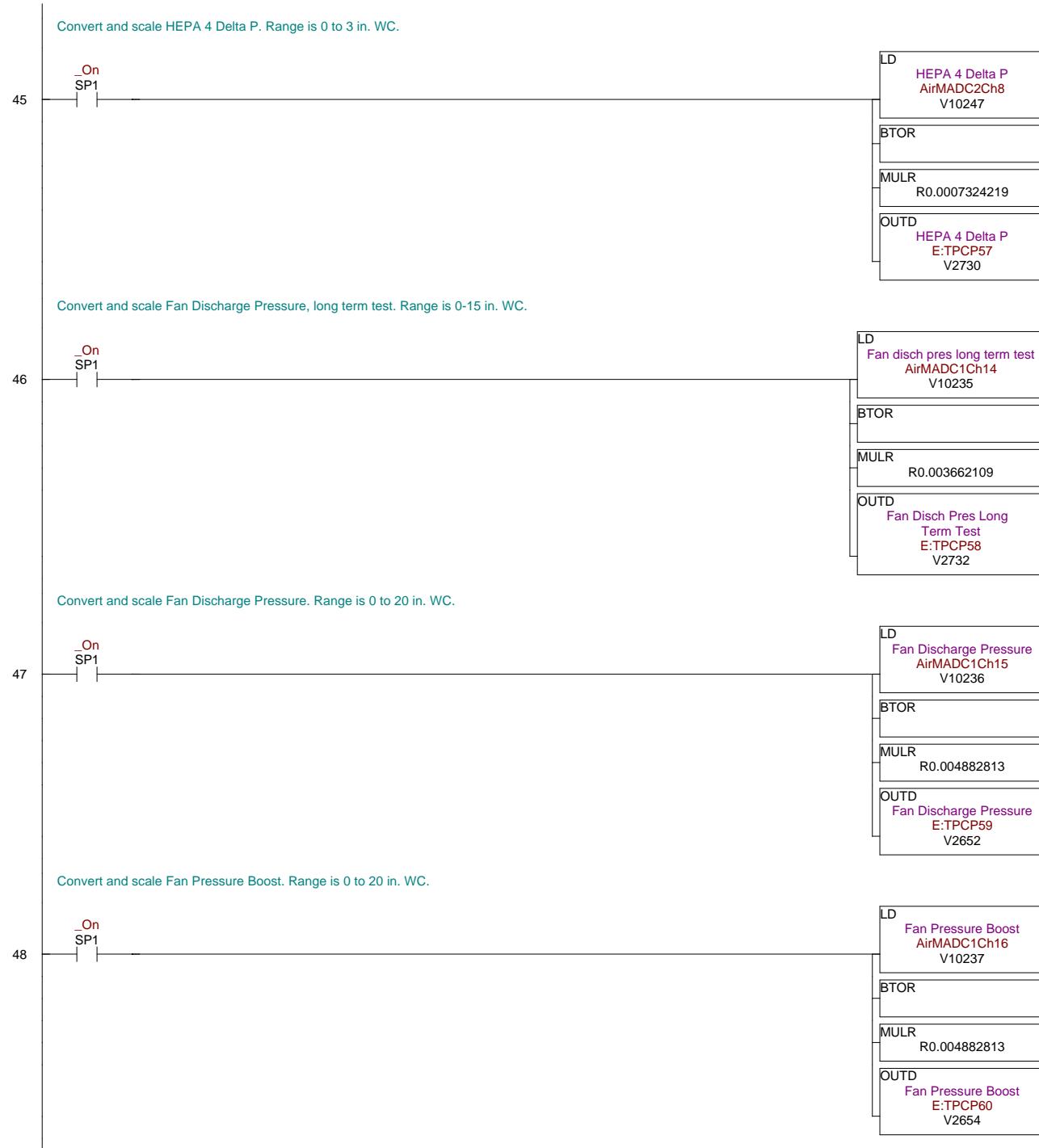




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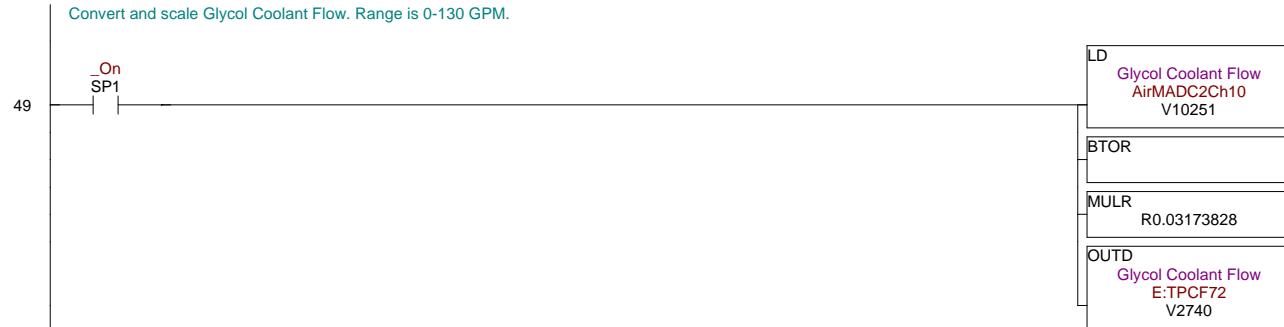
450 thsr_lcw





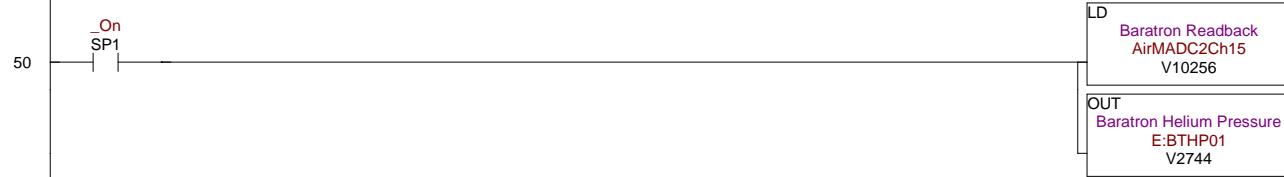
7/11/2006

450 thsr_lcw



Read the Baratron. 100mv=60psig per Kris Anderson. Range is 0 to 3000 psig. on 0-5V input.

So that the alarm block on MI62-FE can work, send back the raw unscaled ADC value.



Convert and scale Convection Readback. The readback is nonlinear ranging from 150 mtorr at 1V to 1000 torr at 9V. Return the voltage output of the device. Full scale at the signal conditioner is 10V.

This input has been hijacked by the target helium bottle.
Send back raw ADC value so alarm blocks work at the front-end and copy it to analog output 2-1-12 and thence on to the MADC87, ch51, rack THSR103



Convert and scale Compressed Air Pressure. Range is 0 to 300 psig.



Copy the Target Chiller Condensate Tank Level to the comfort display and to ACNET, both as an integer so that alarming can be done by the ACNET alarm process.





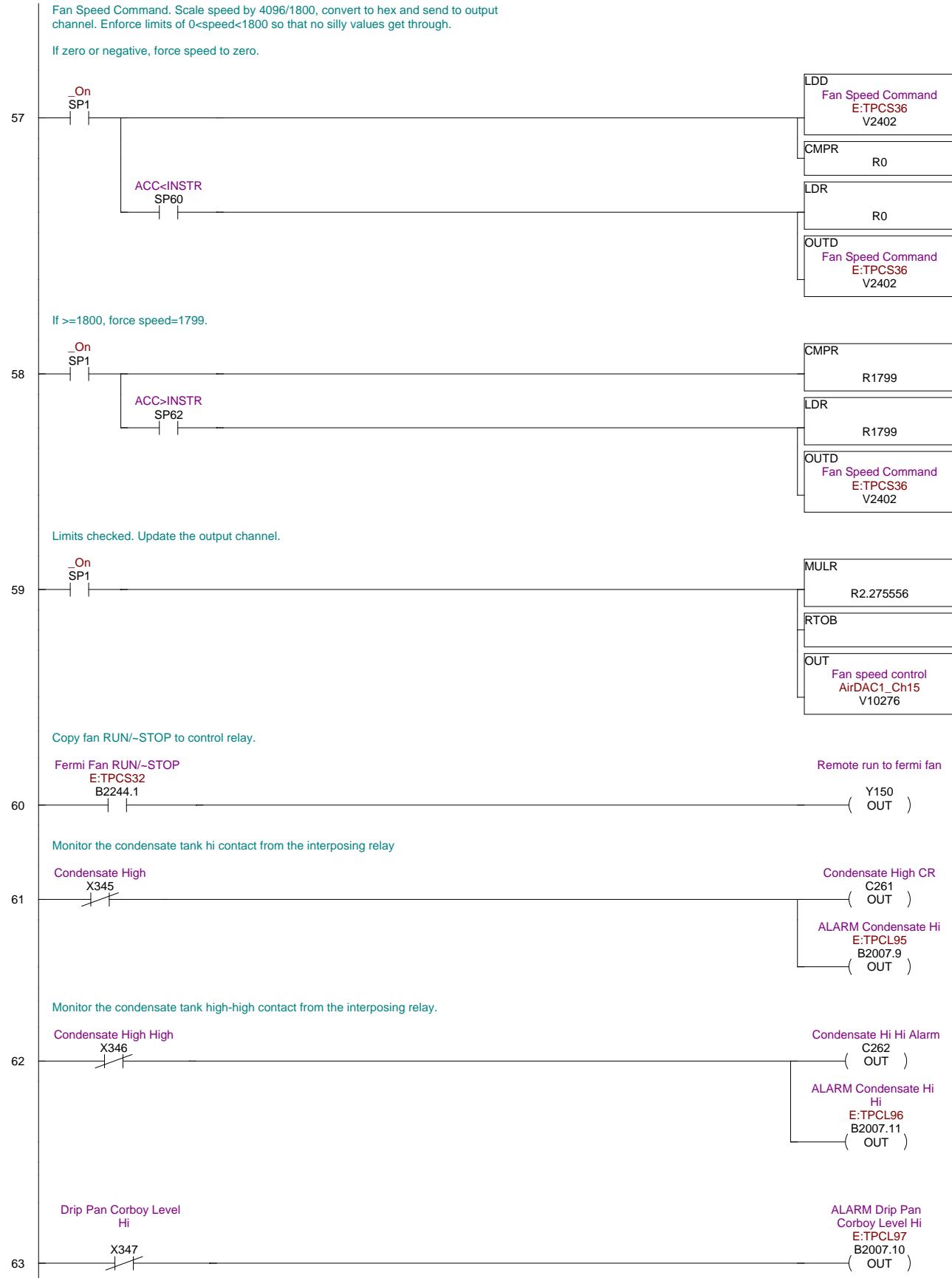
Show the reheater power. Convert and scale the 4-20ma reading from the reheater panel power meter to 0-50Kw range.

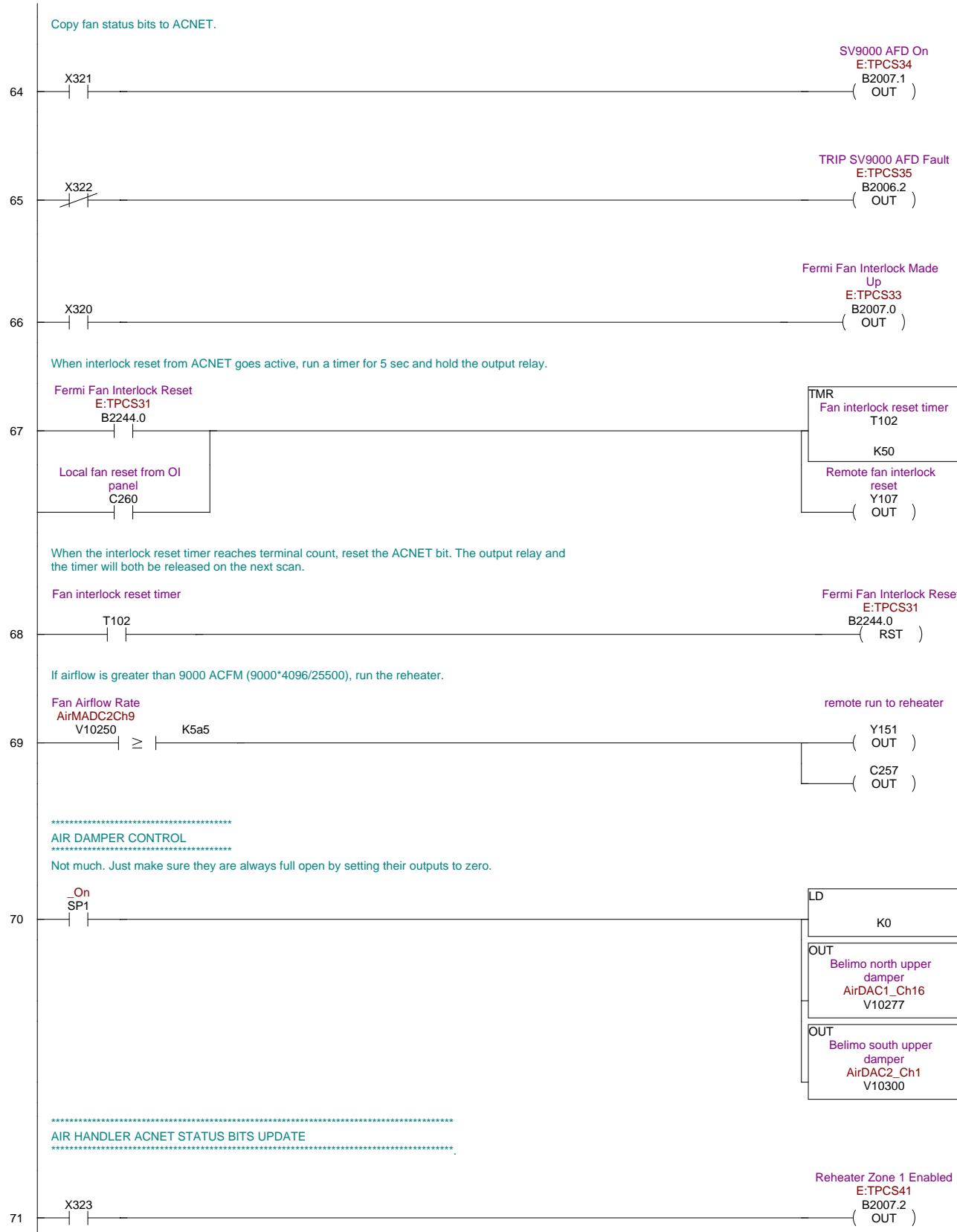


FAN AND REHEATER CONTROL AND MONITORING

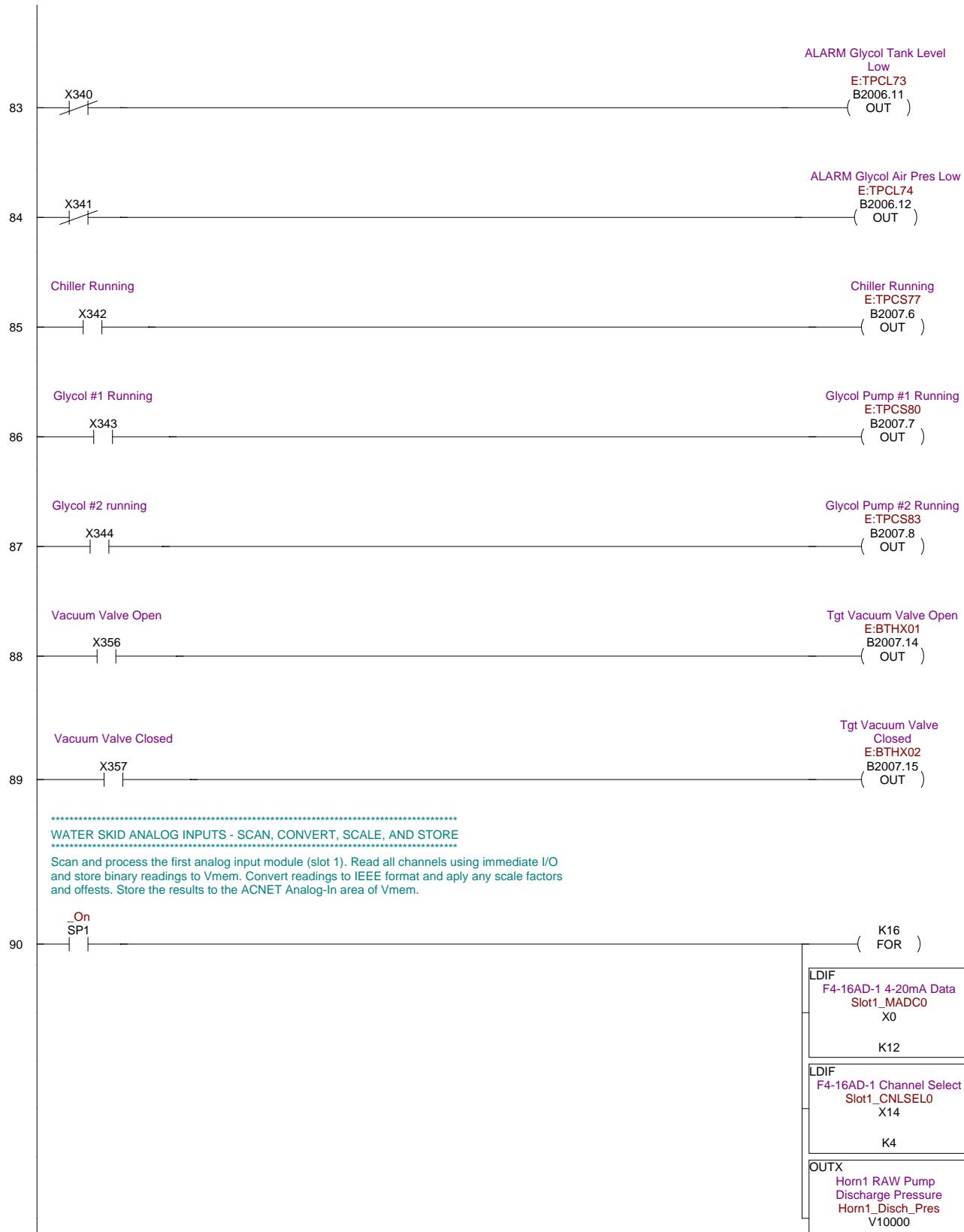
Convert and scale fan speed. Range is 0-1800 RPM.

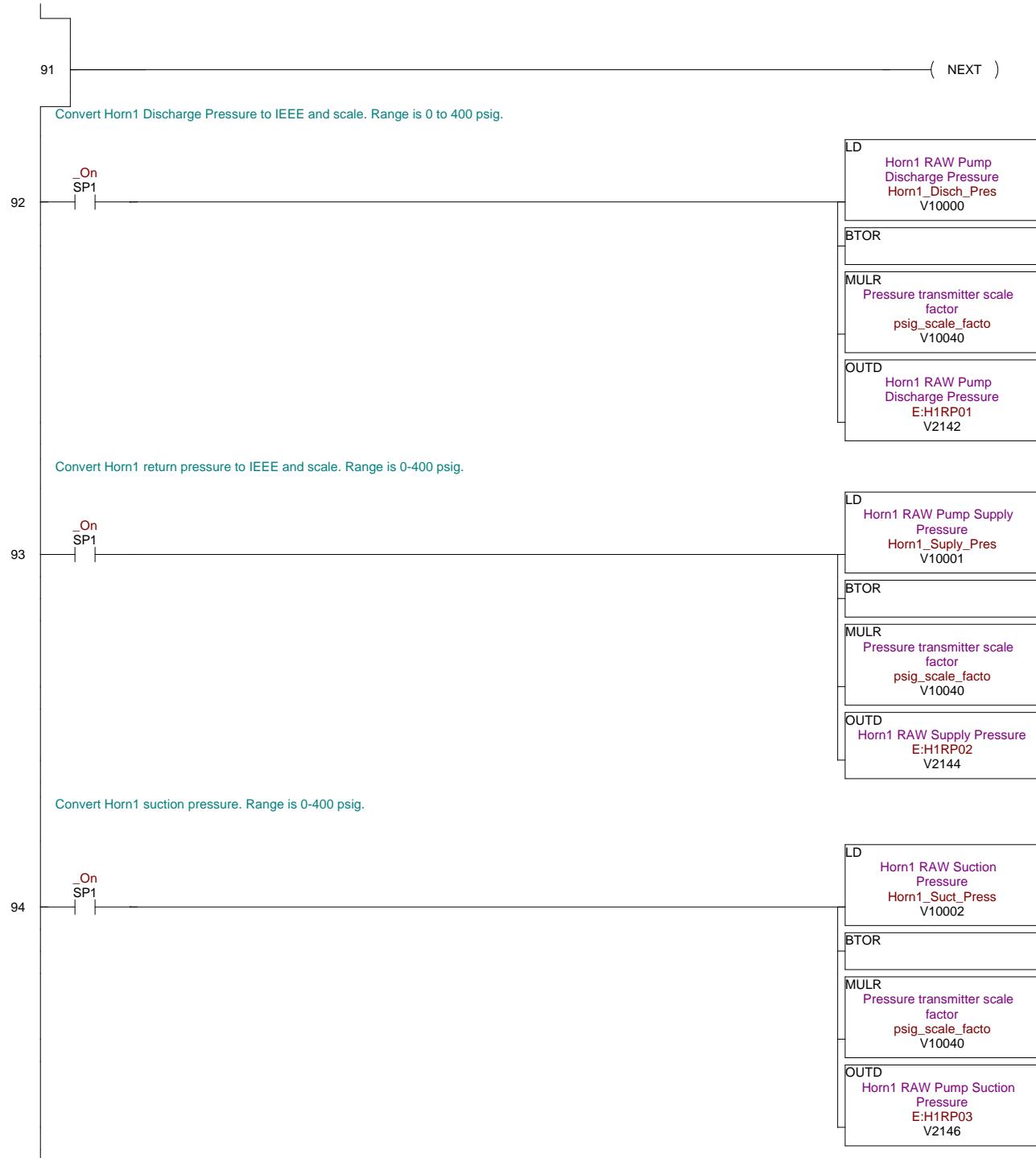










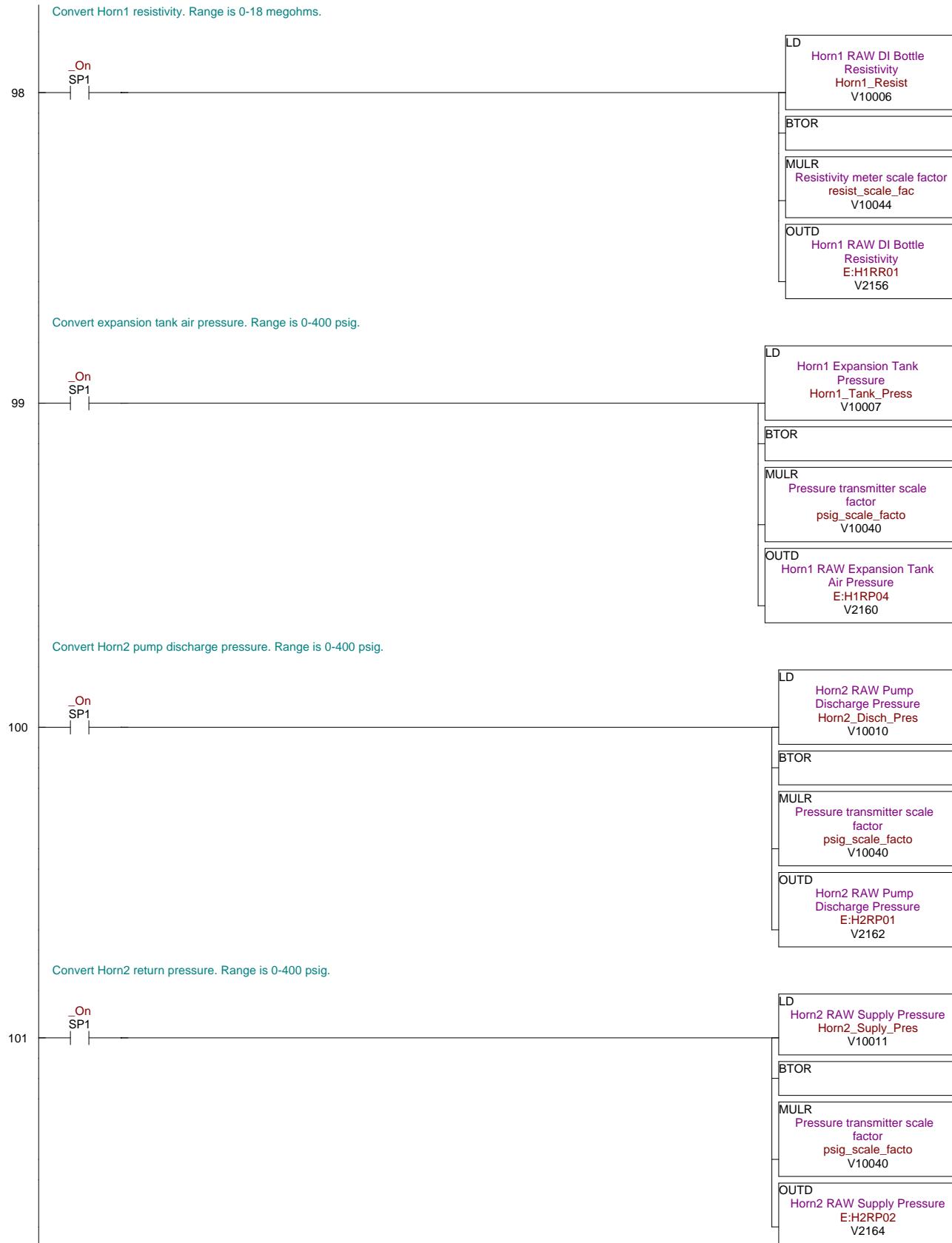


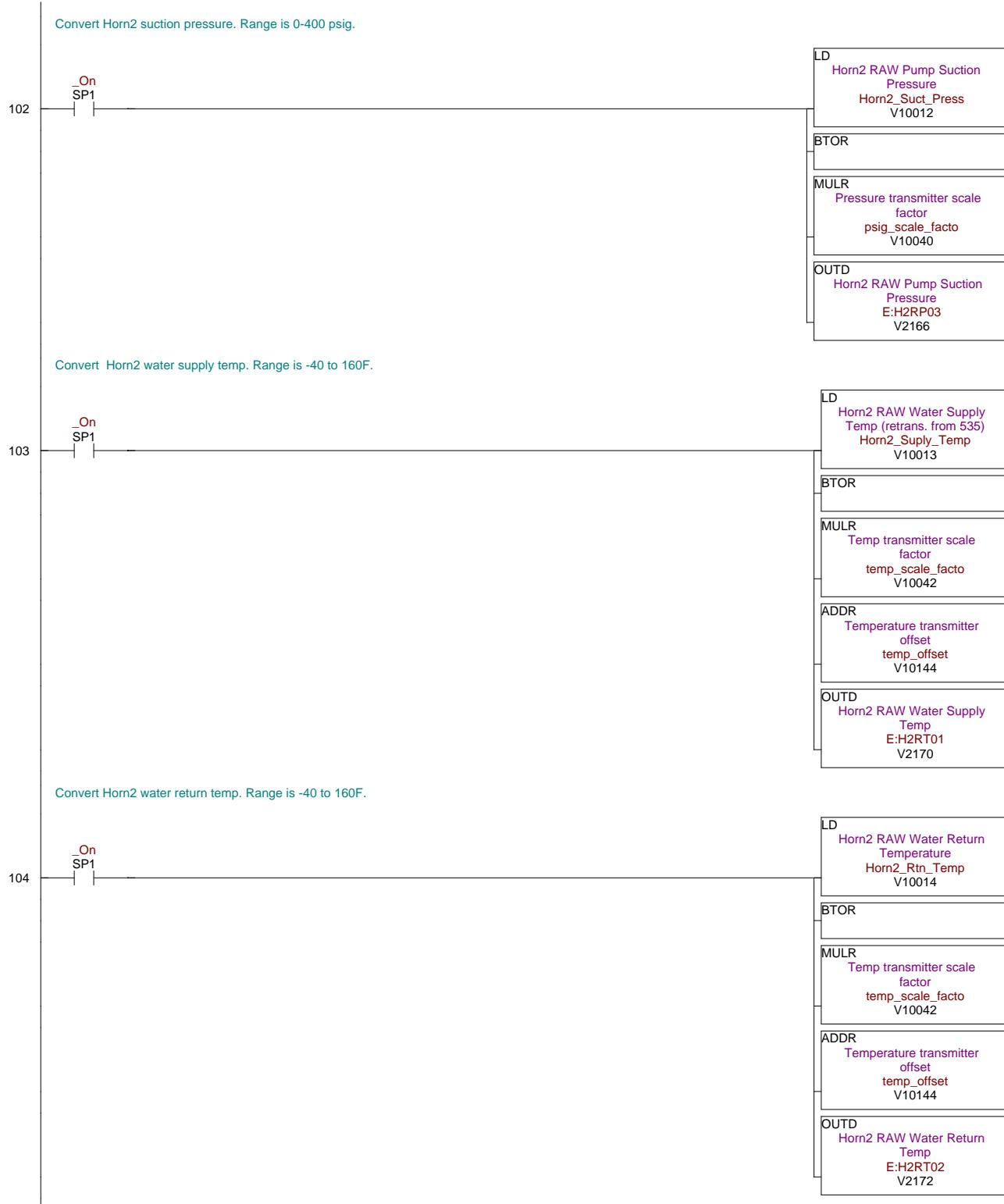


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thsr_lcw

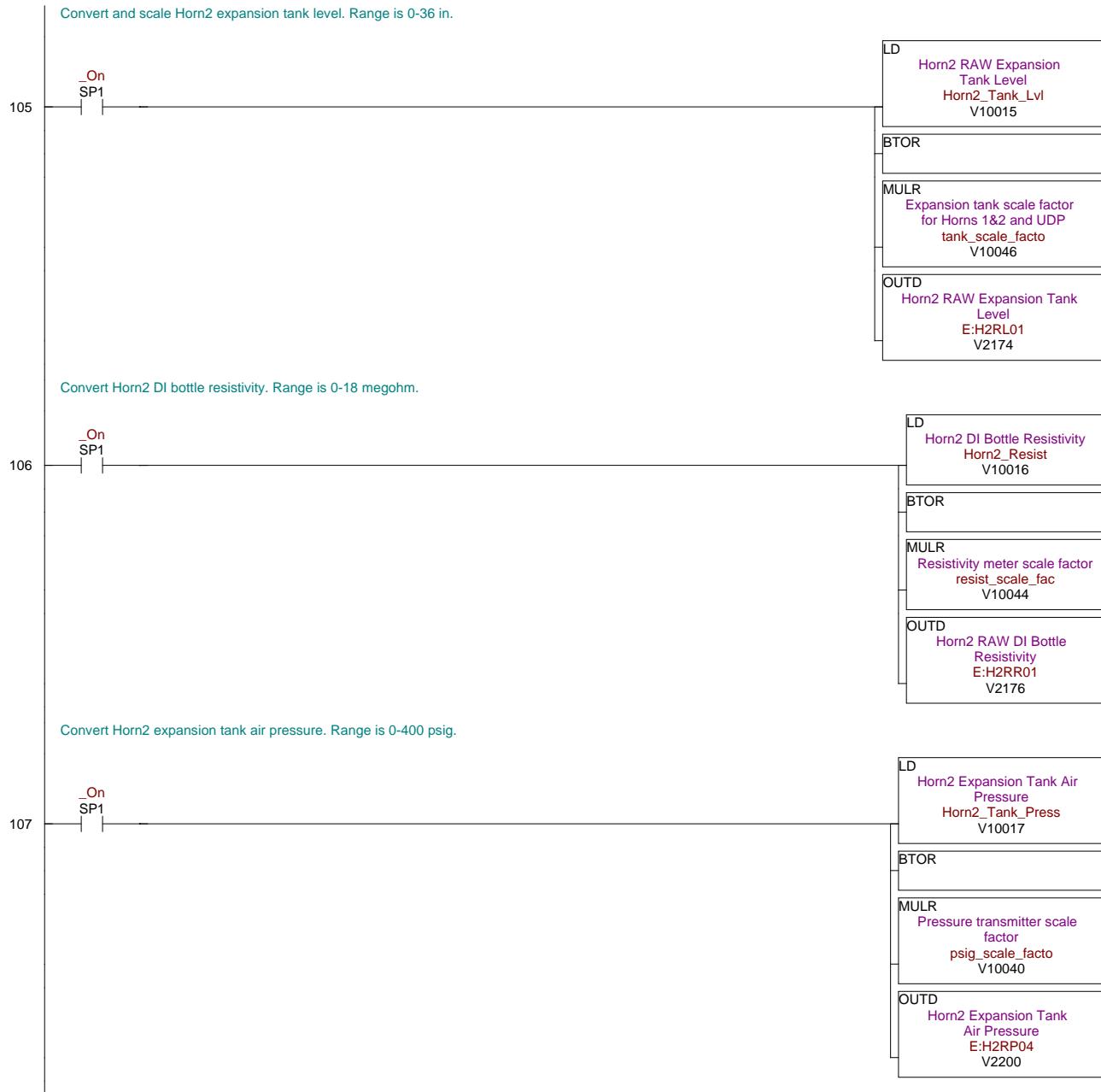


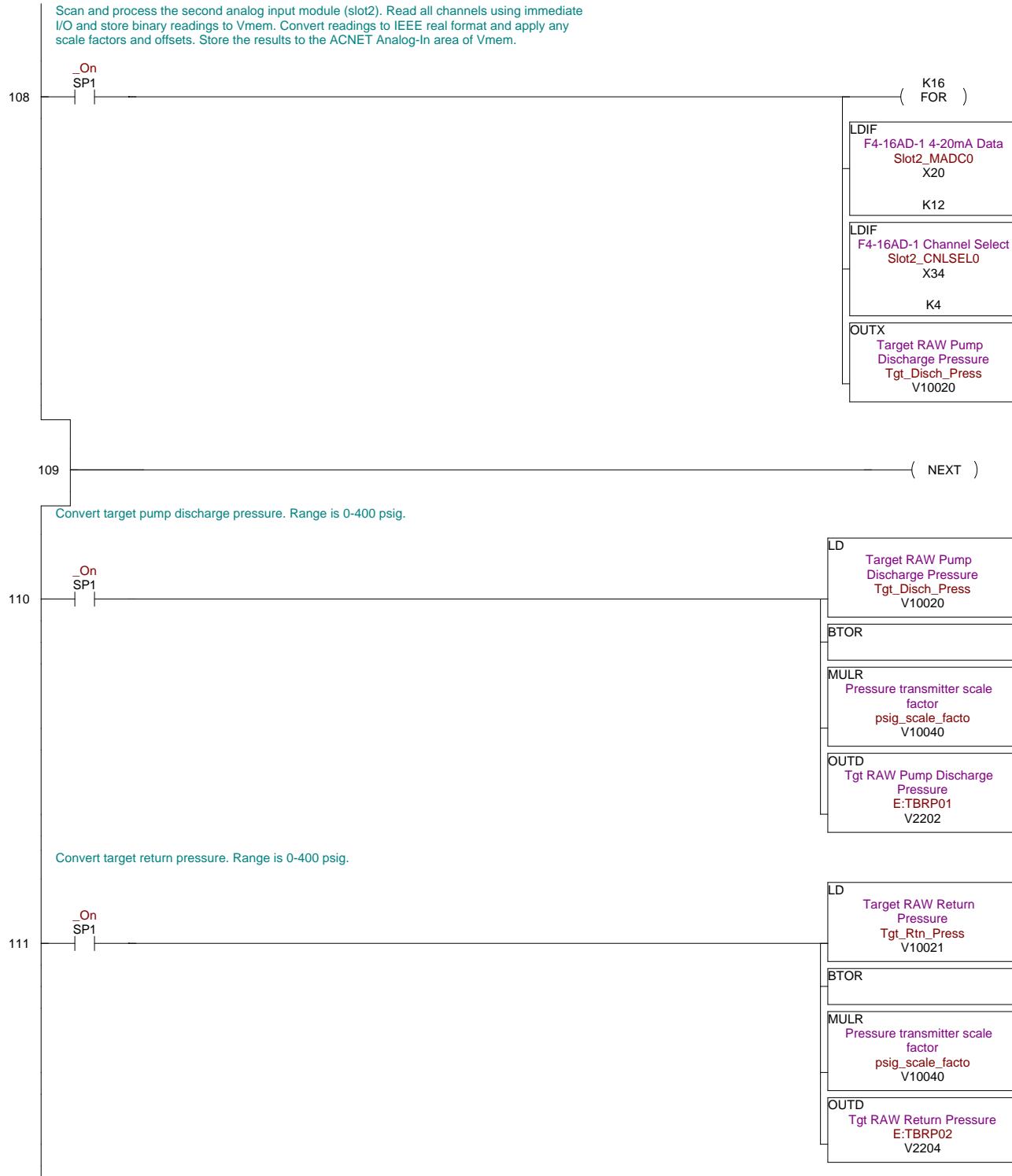


7/11/2006

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thsr_lcw

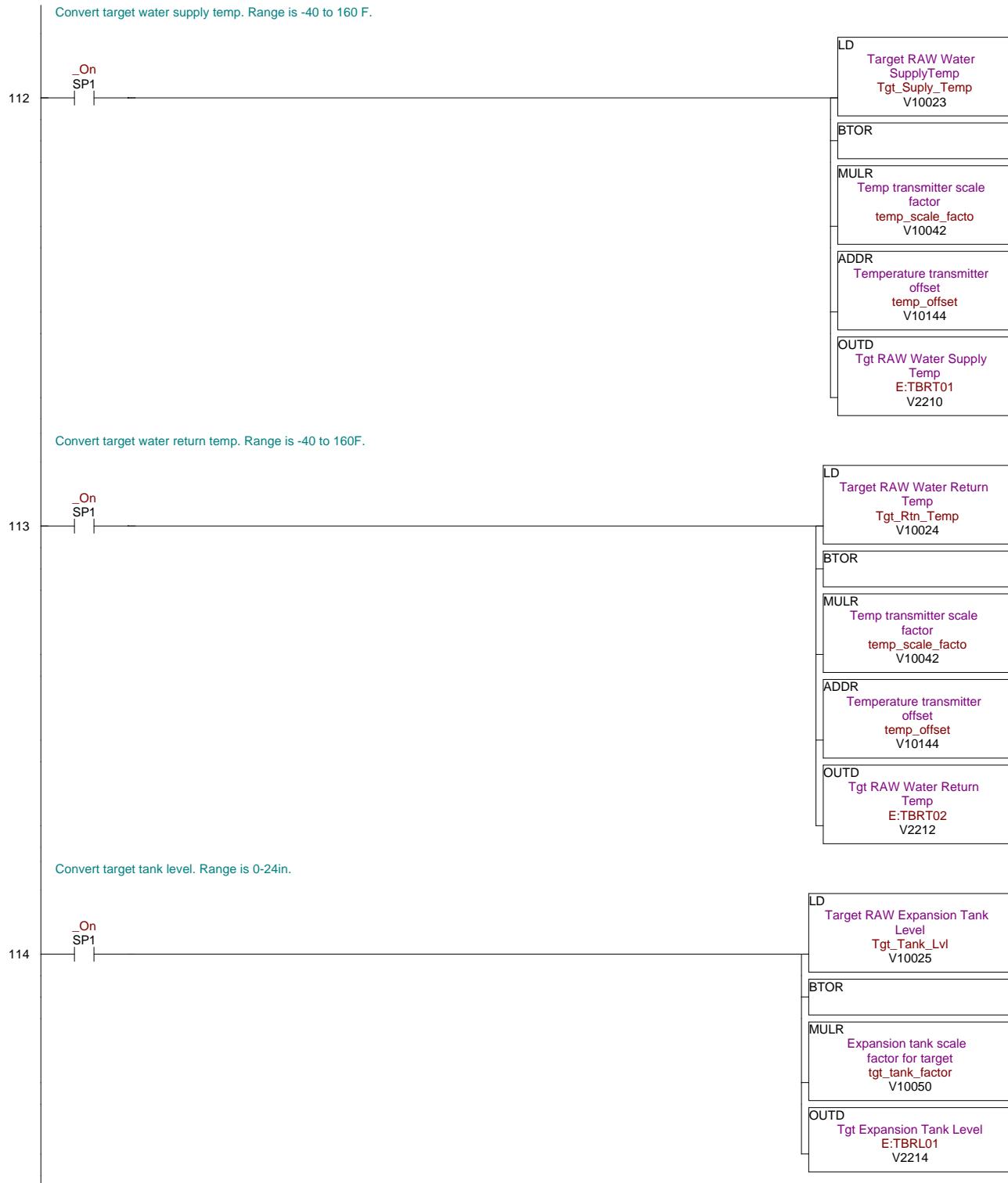


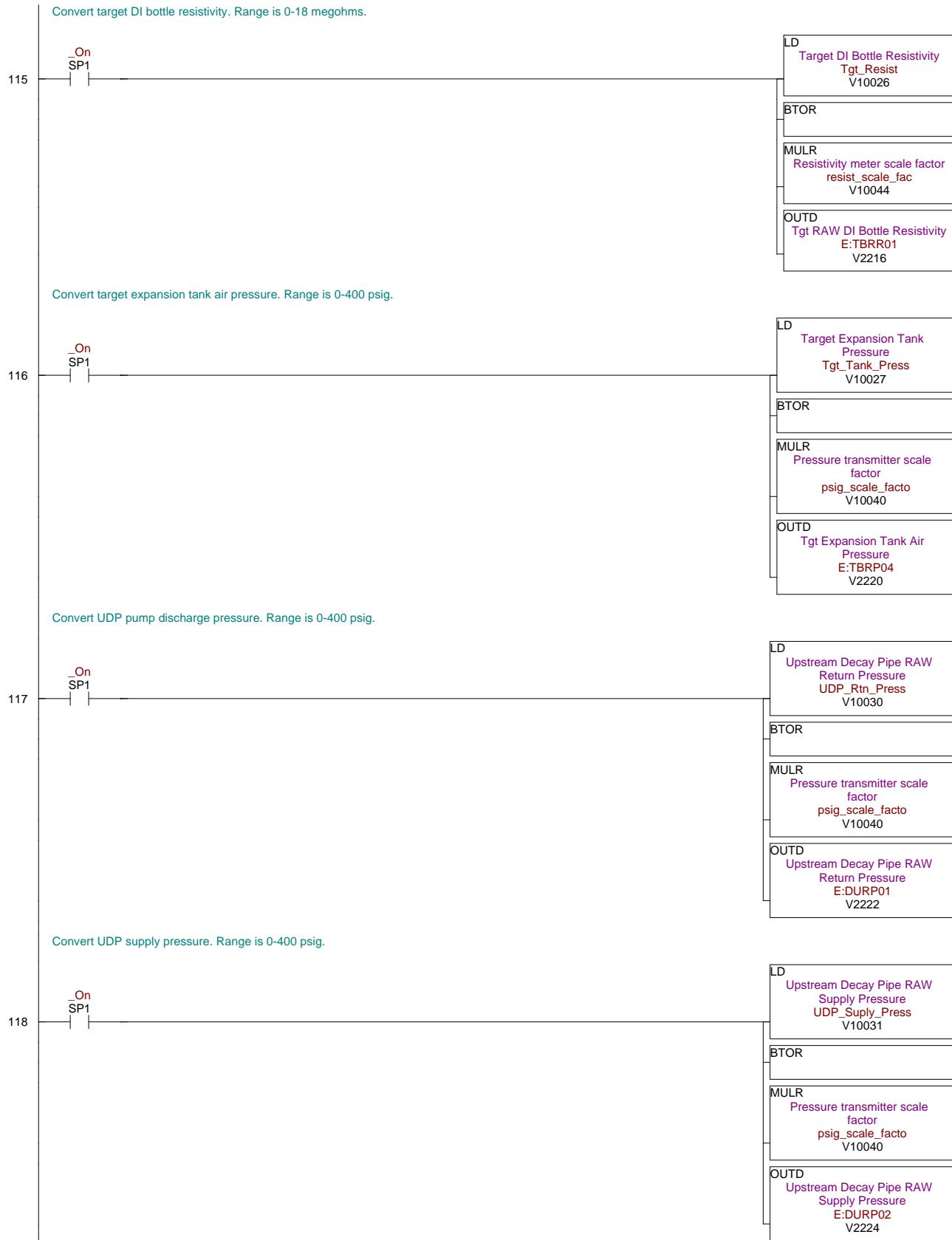


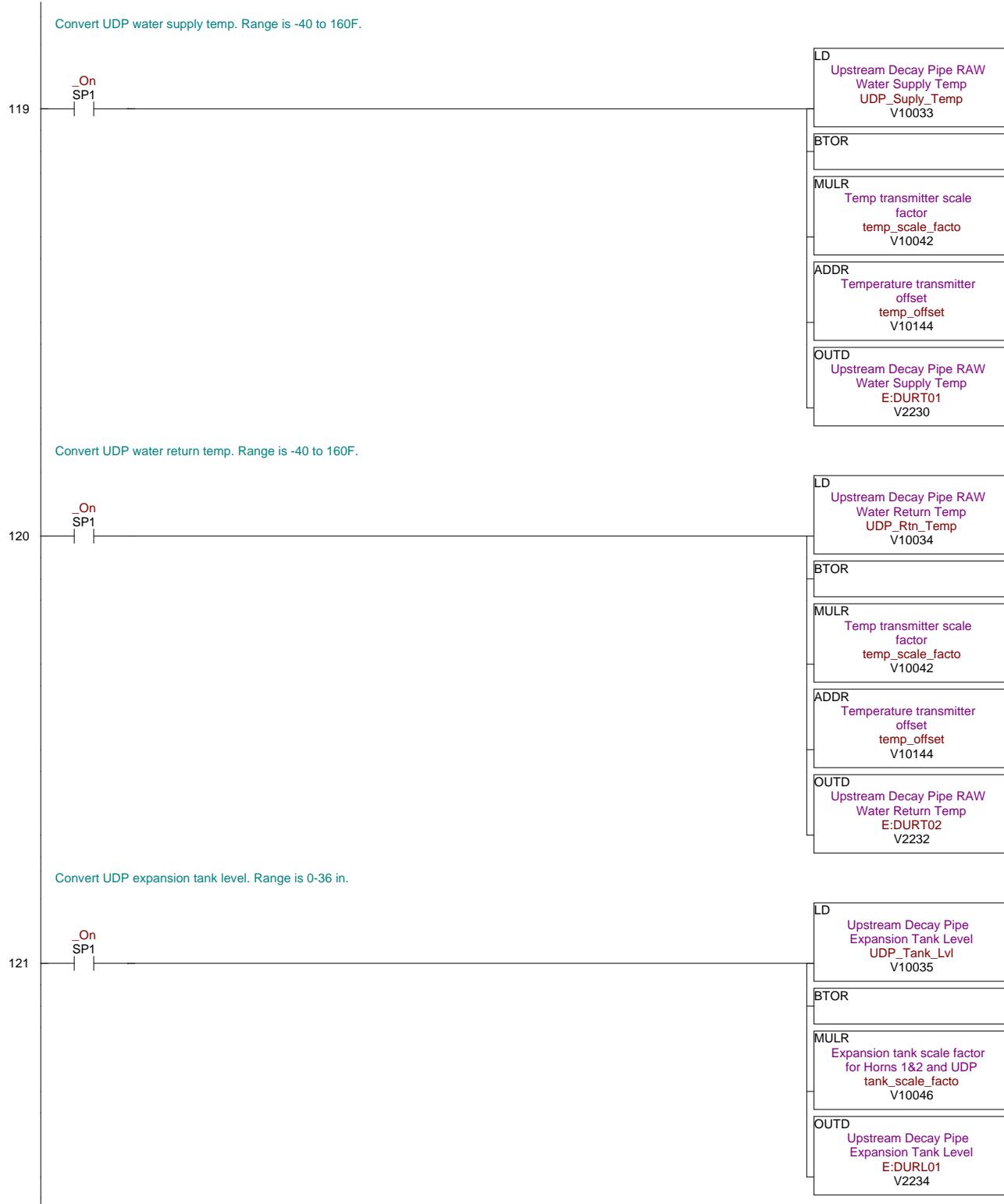
7/11/2006

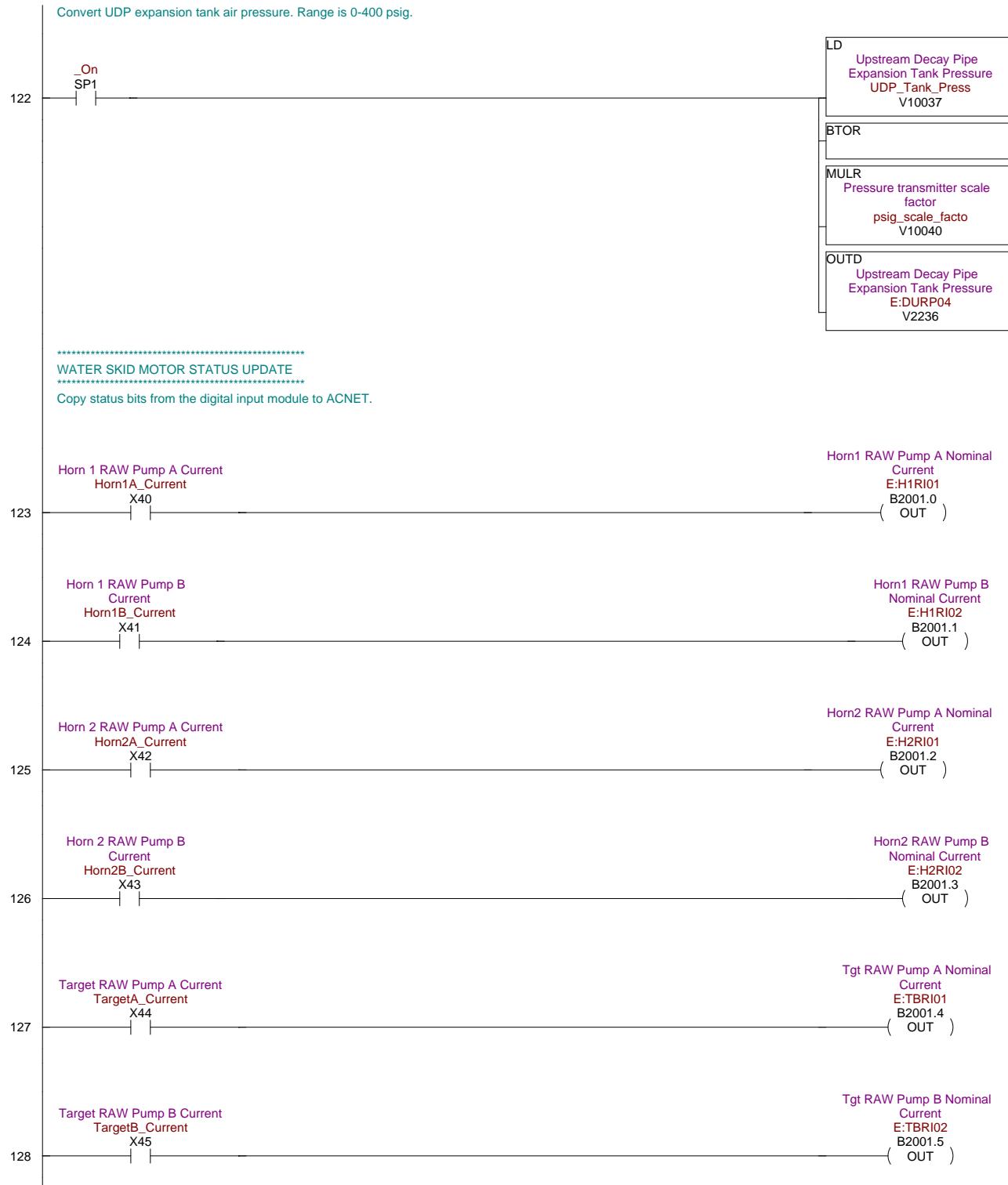
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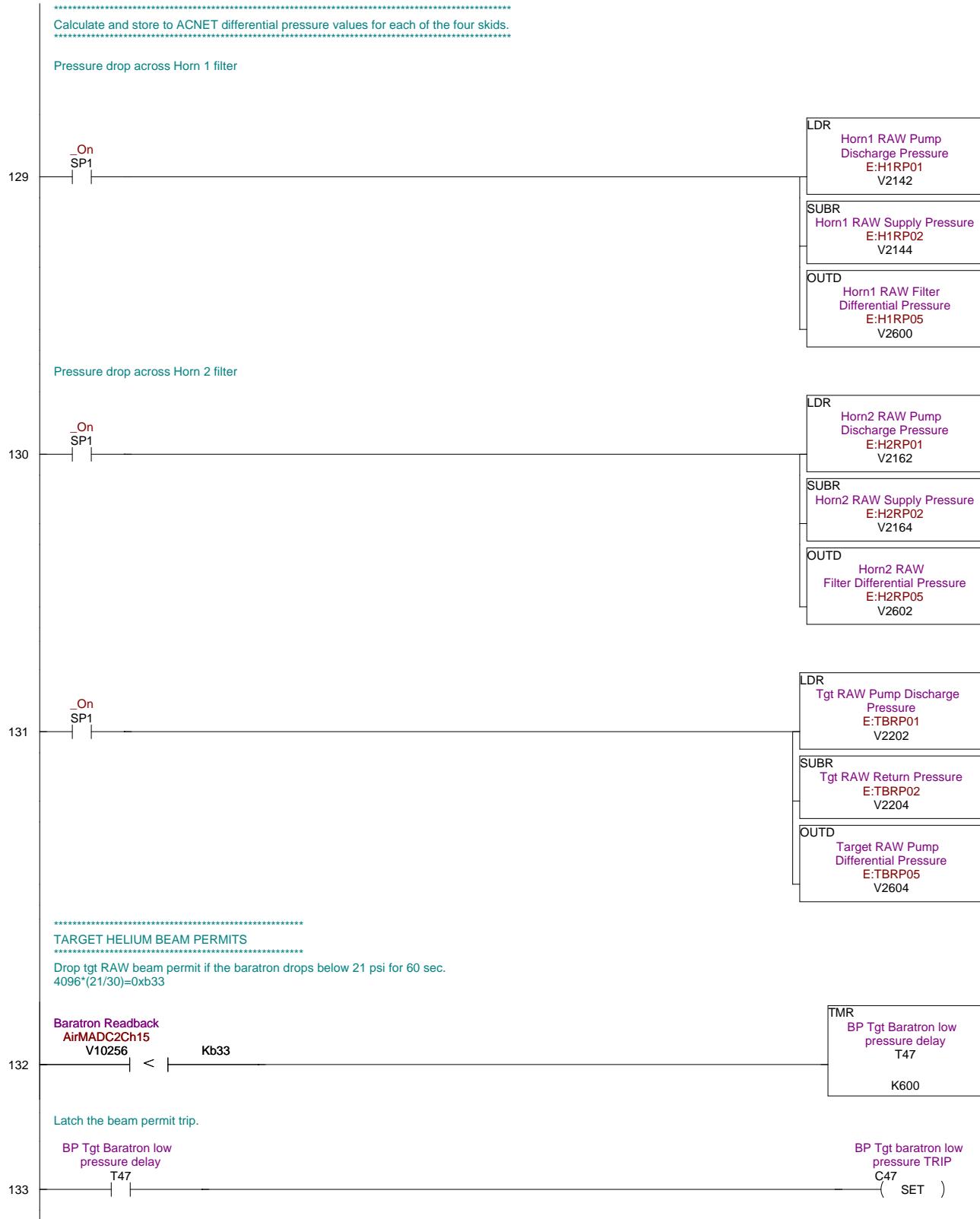
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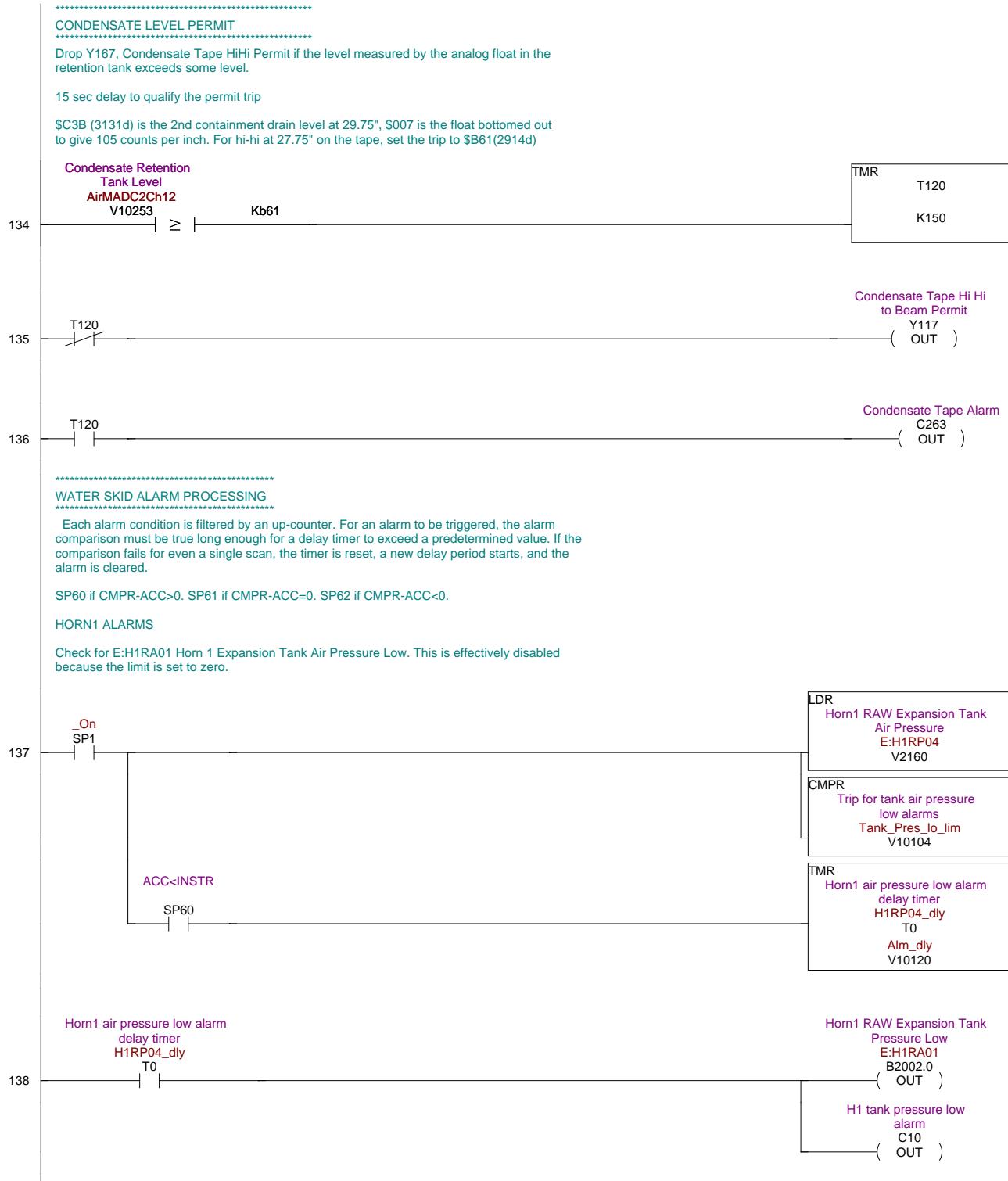


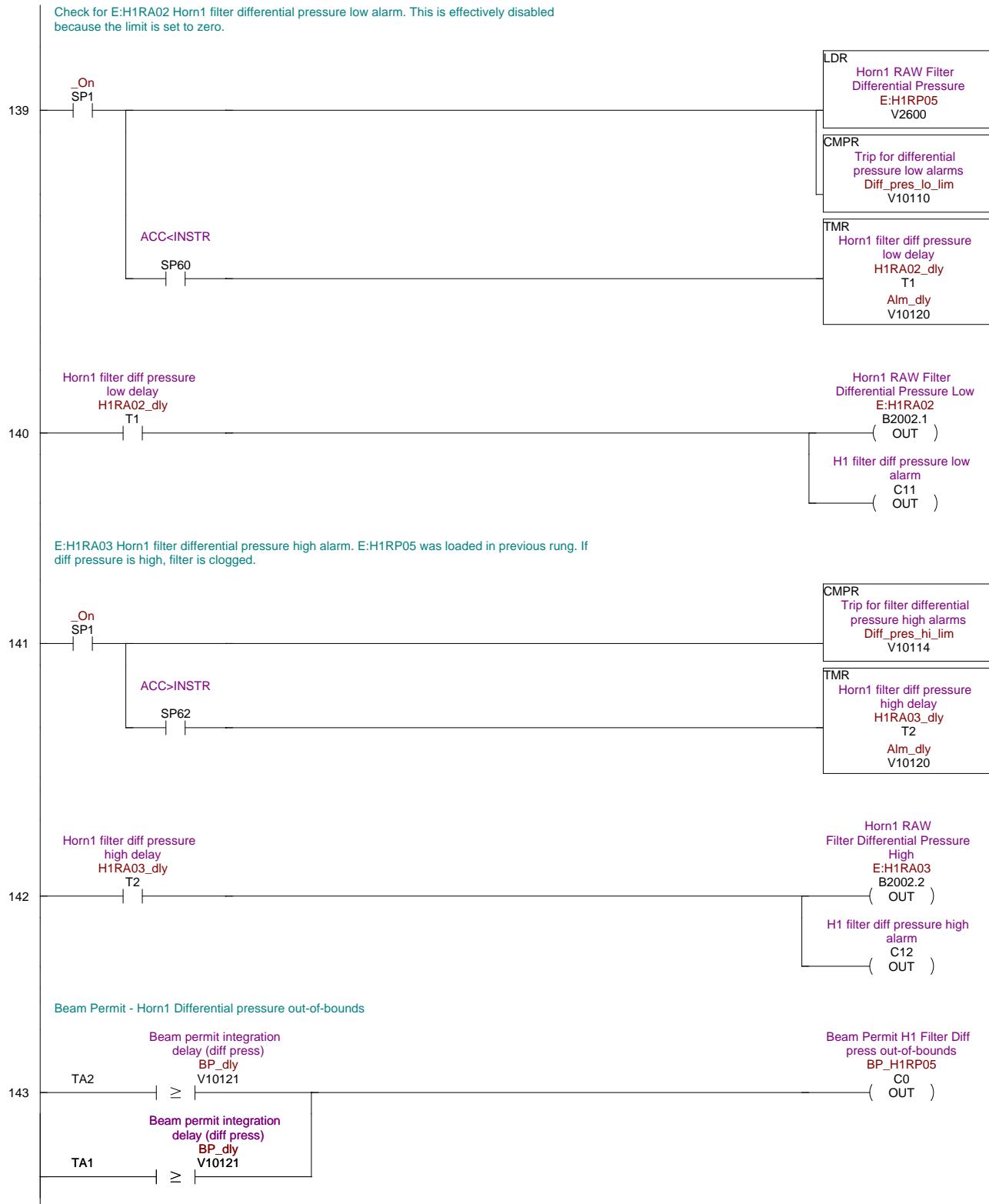


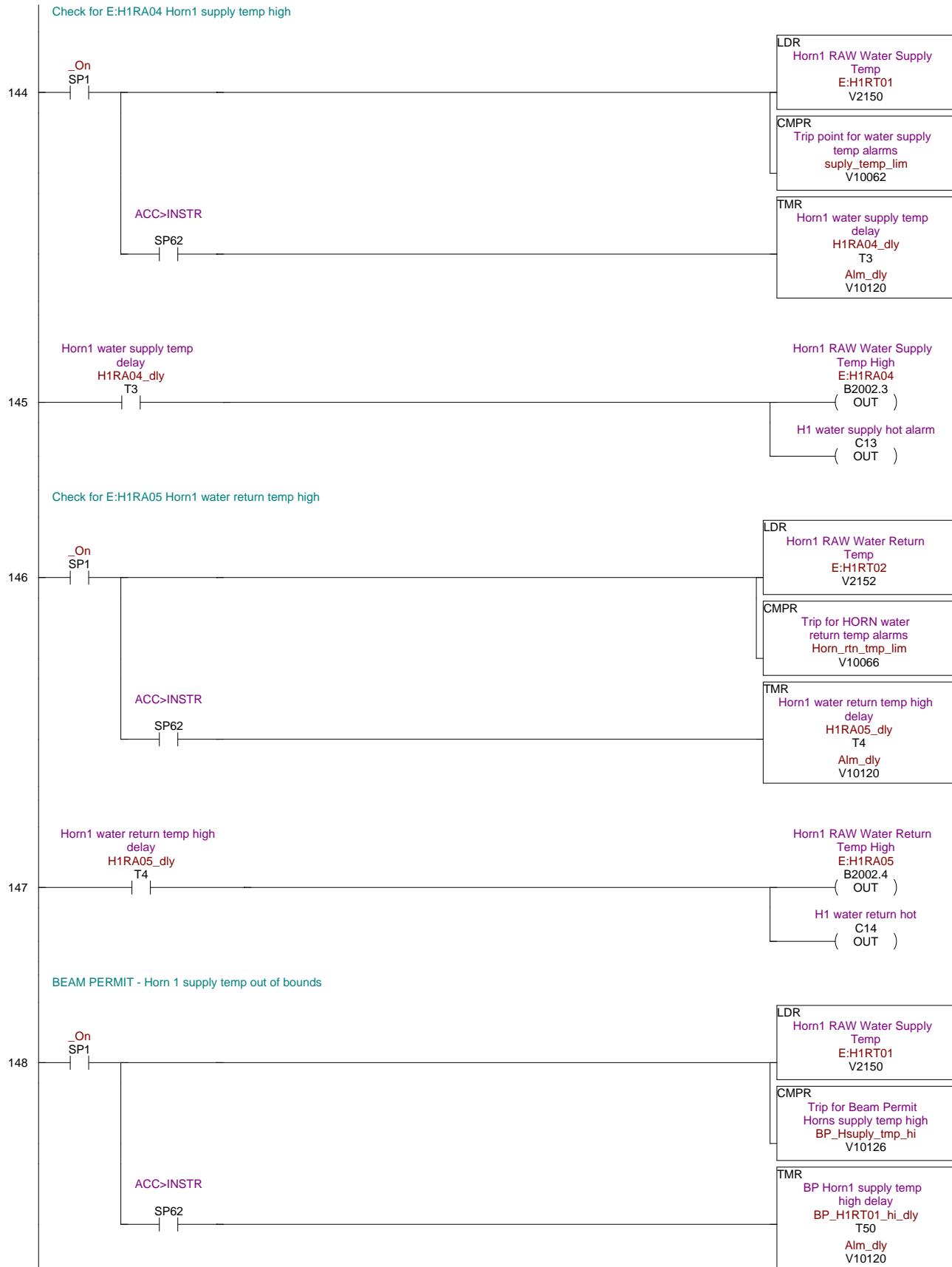


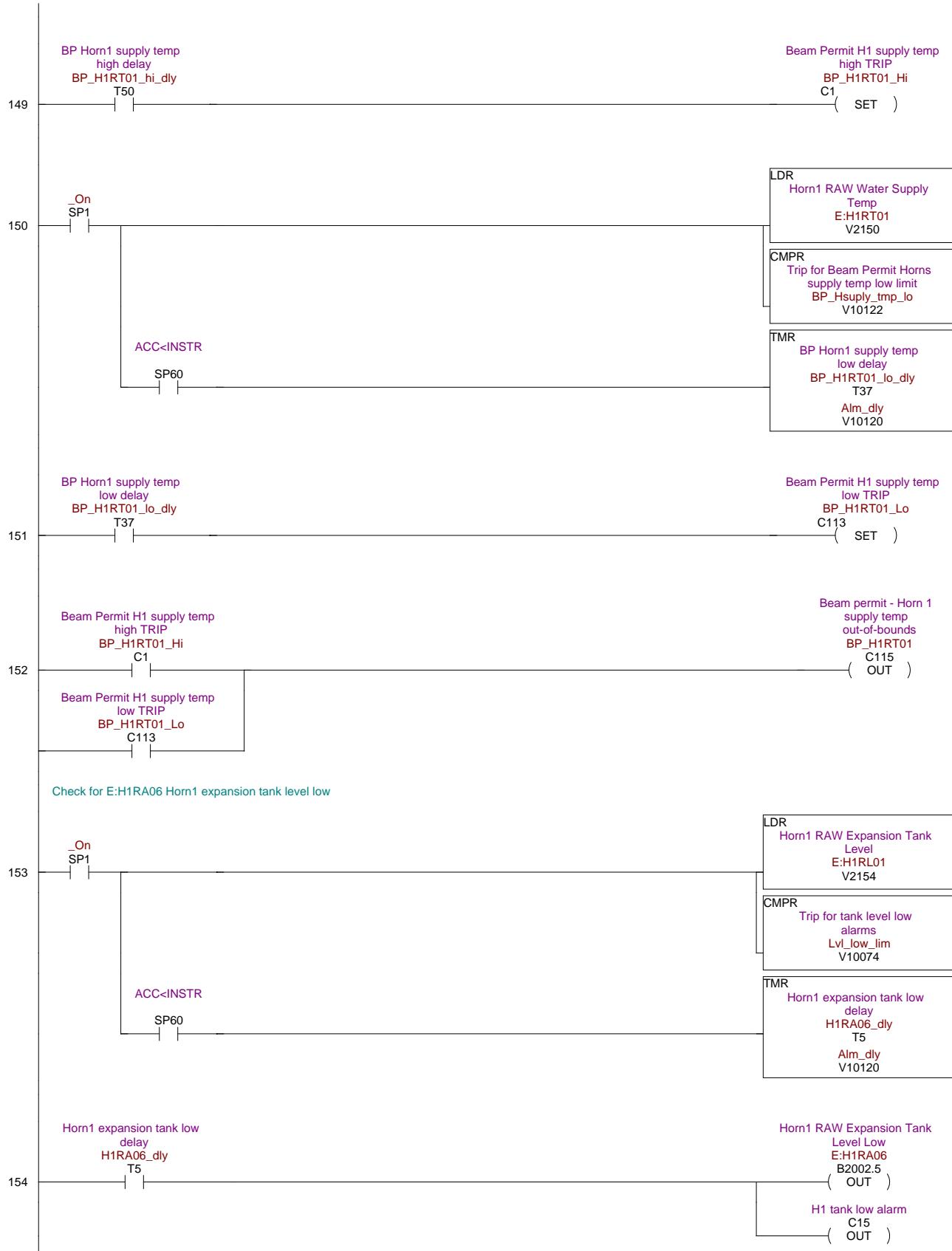


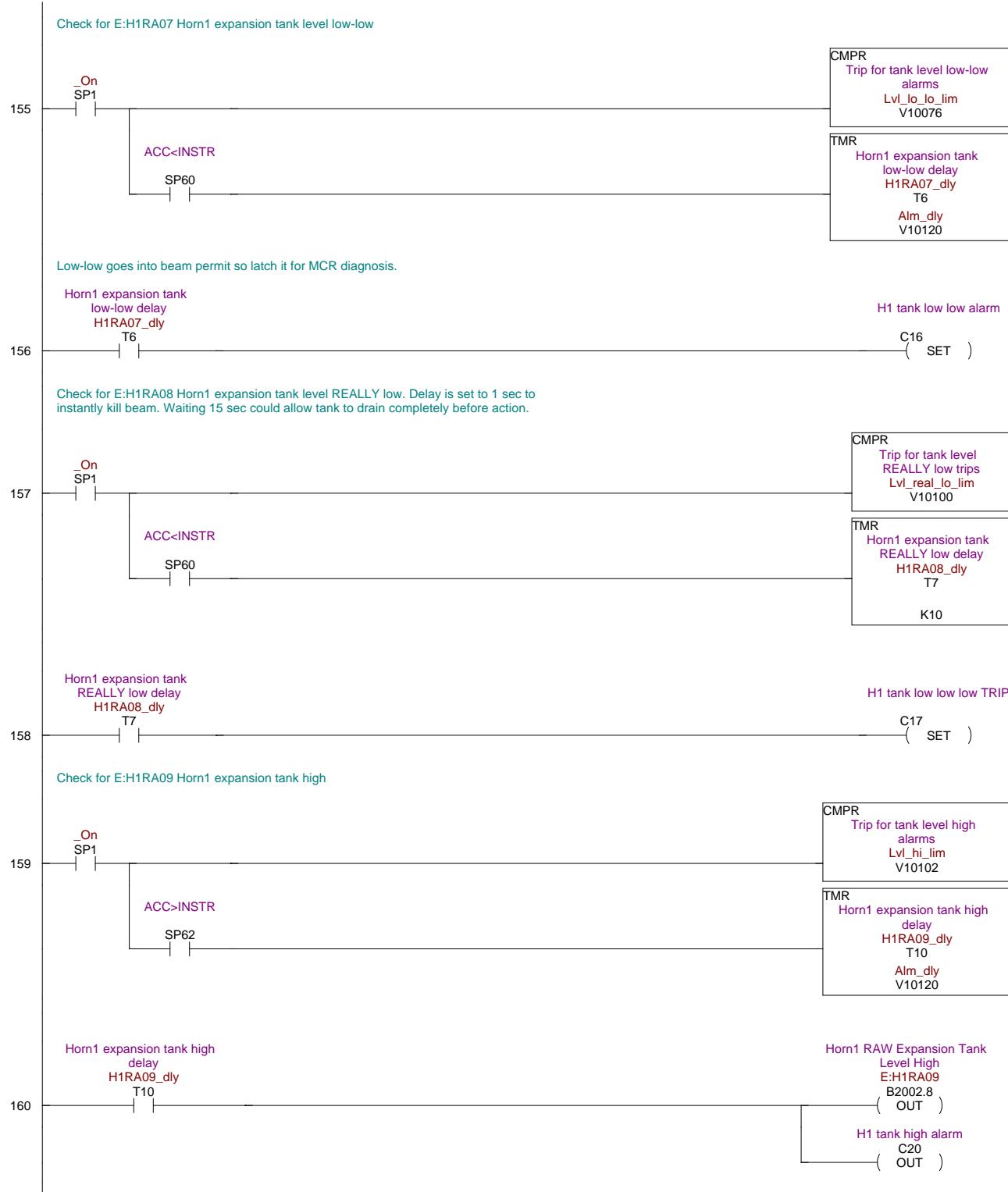


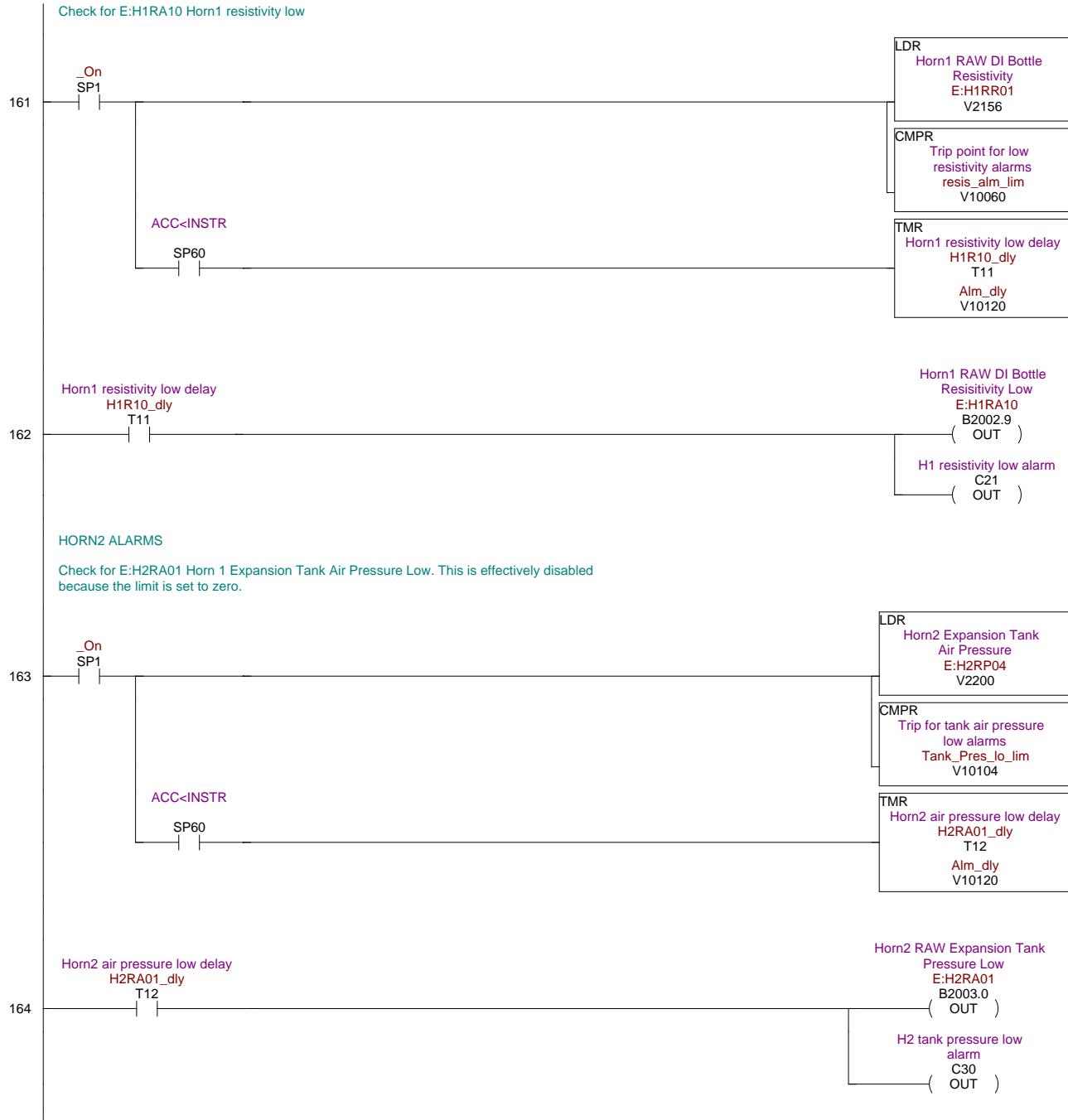


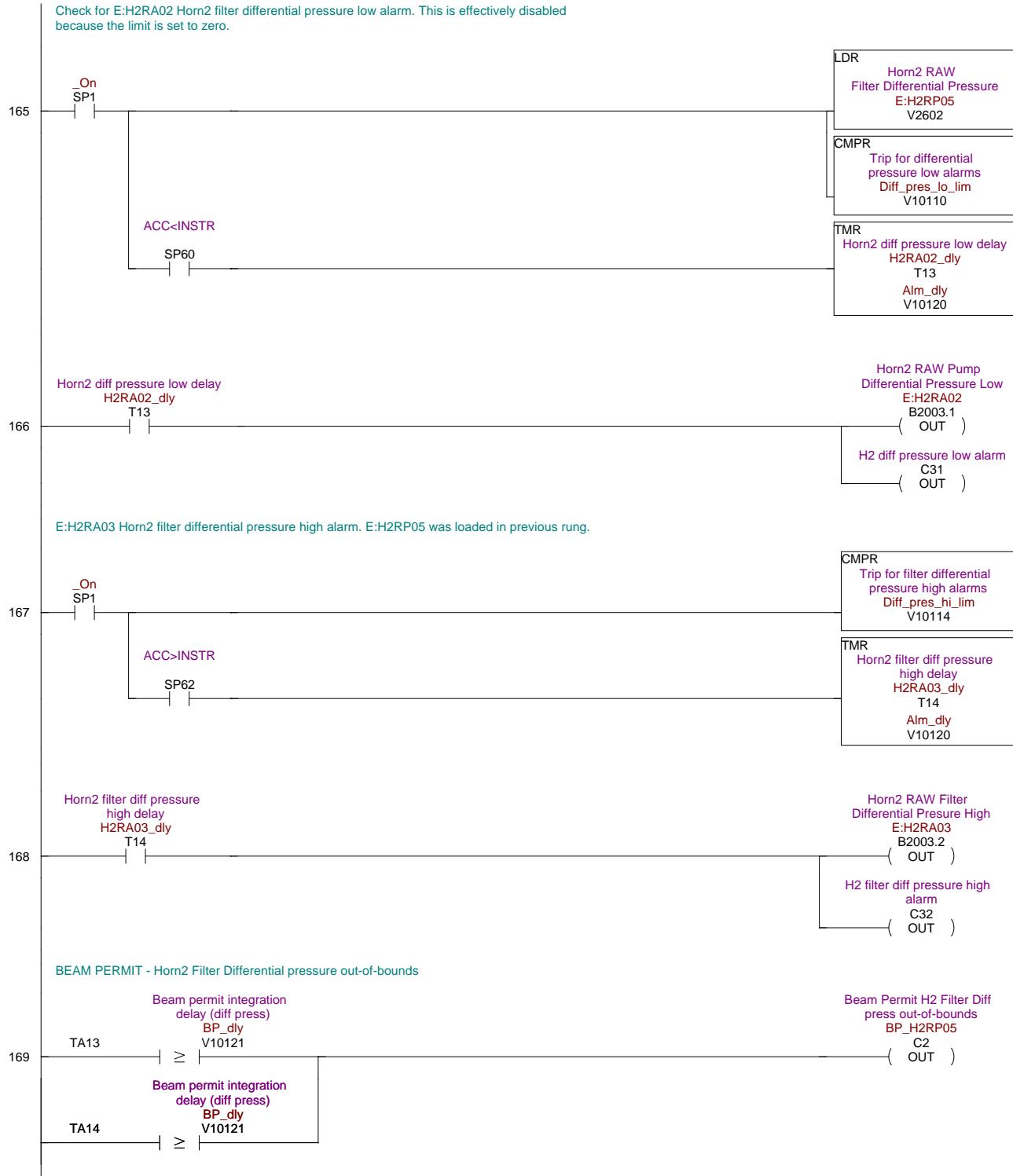


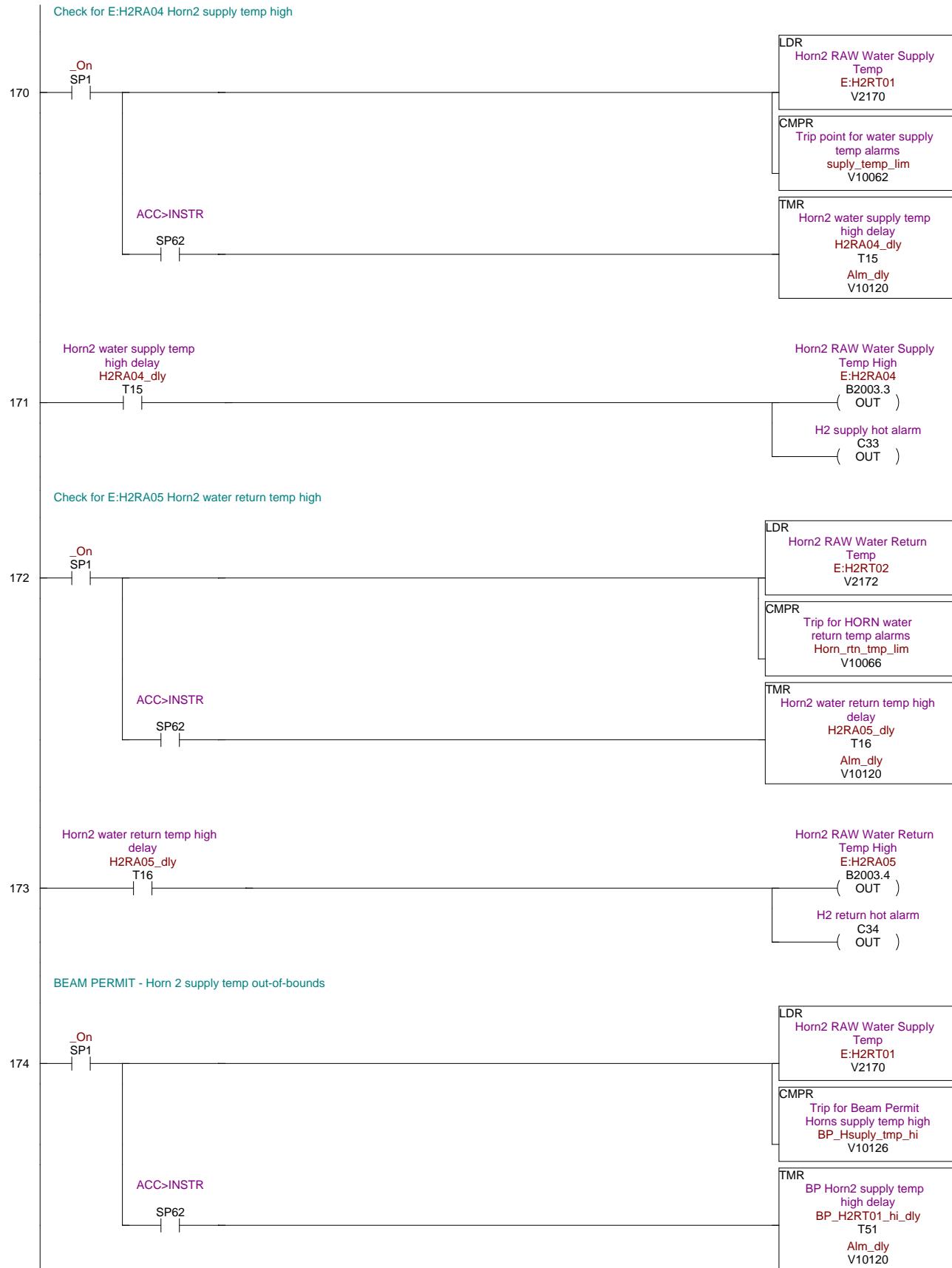


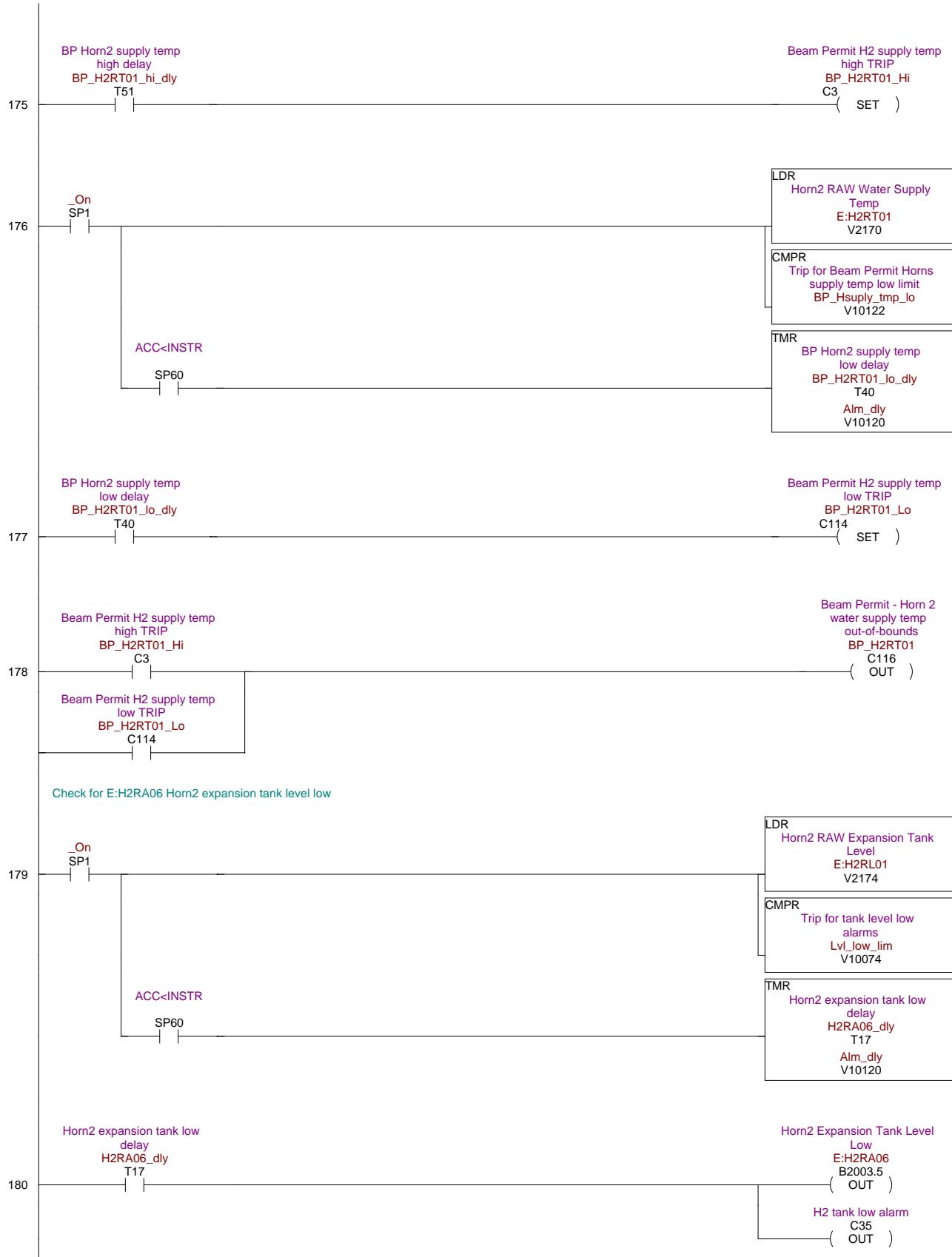


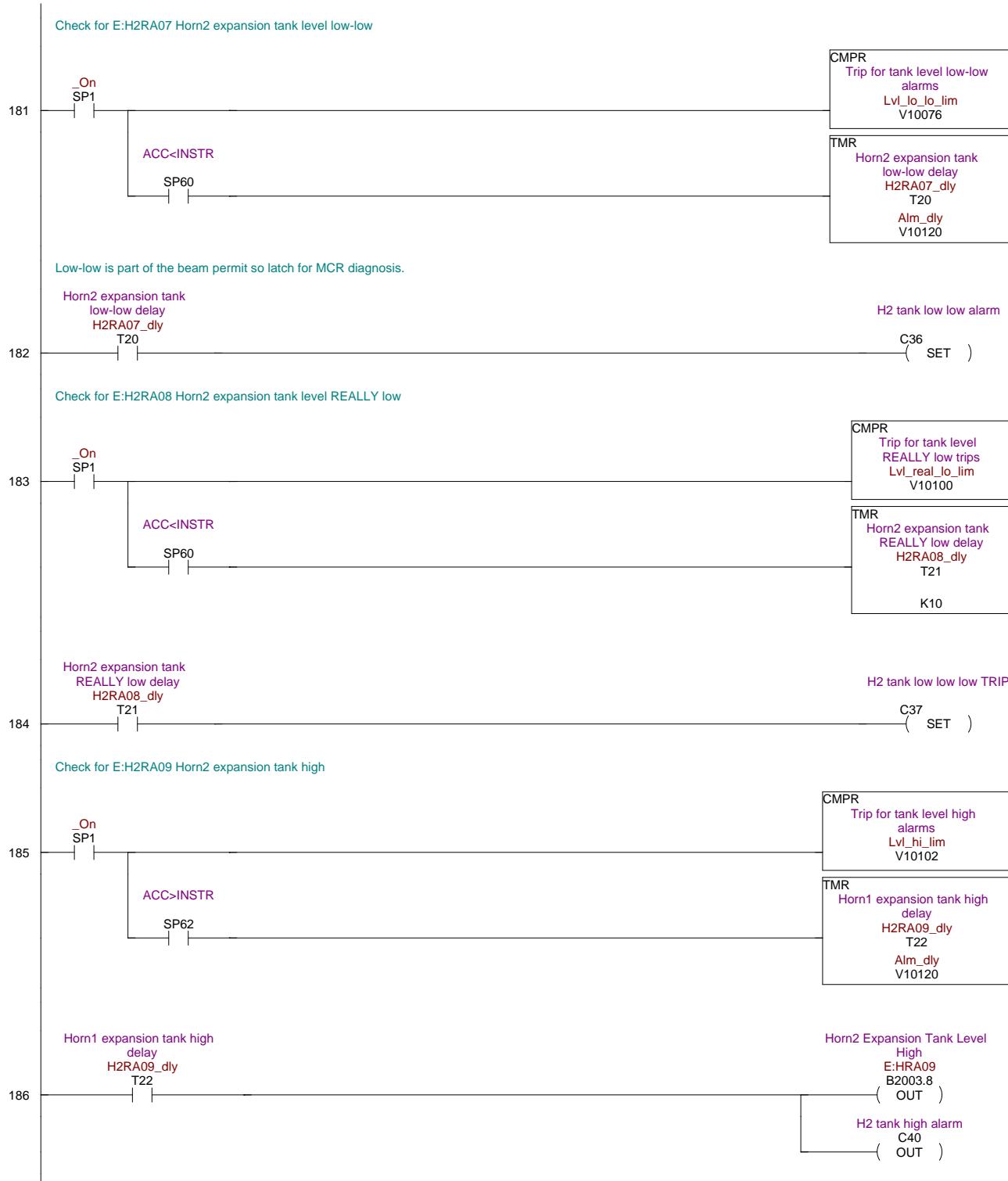








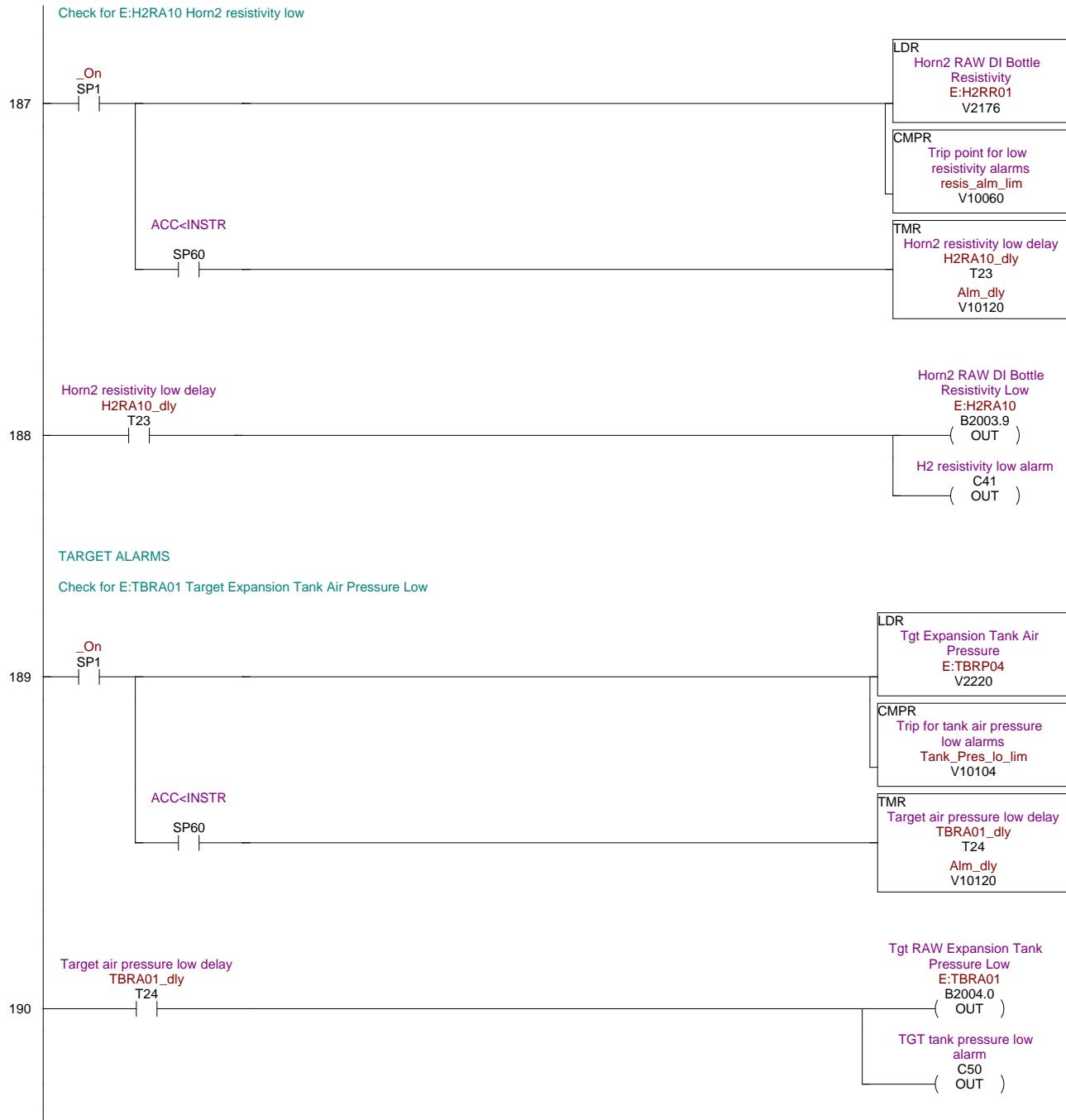


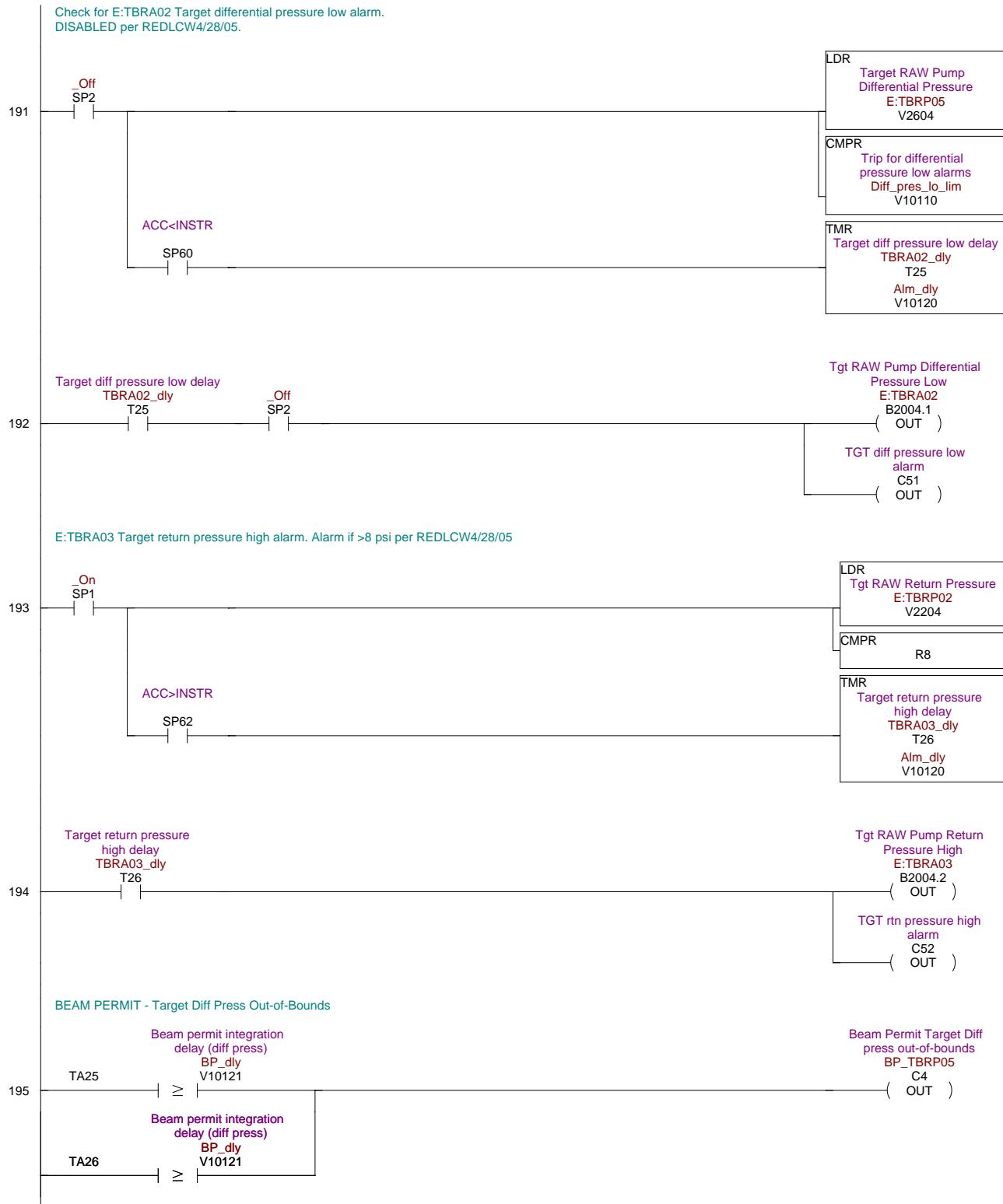


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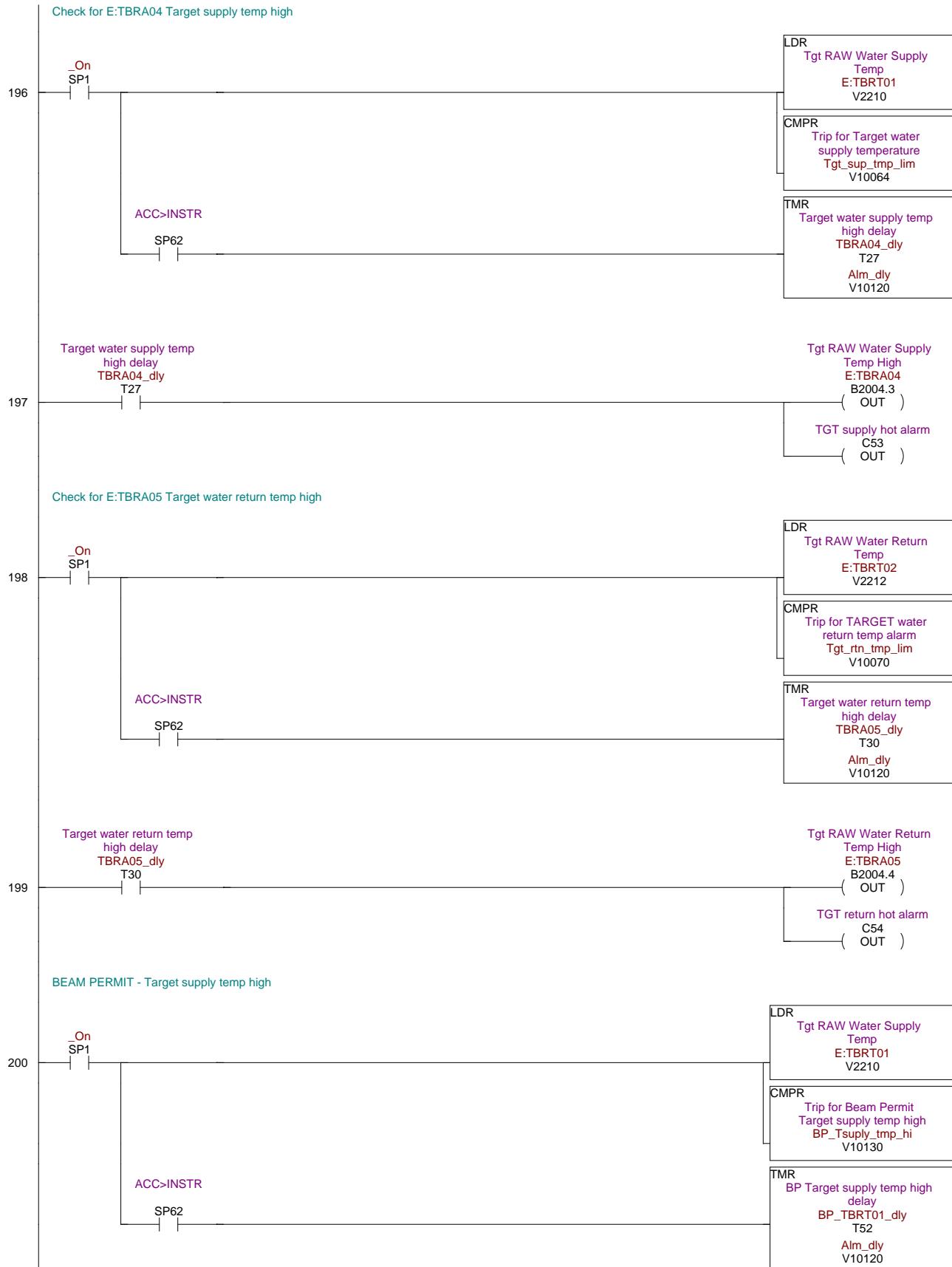


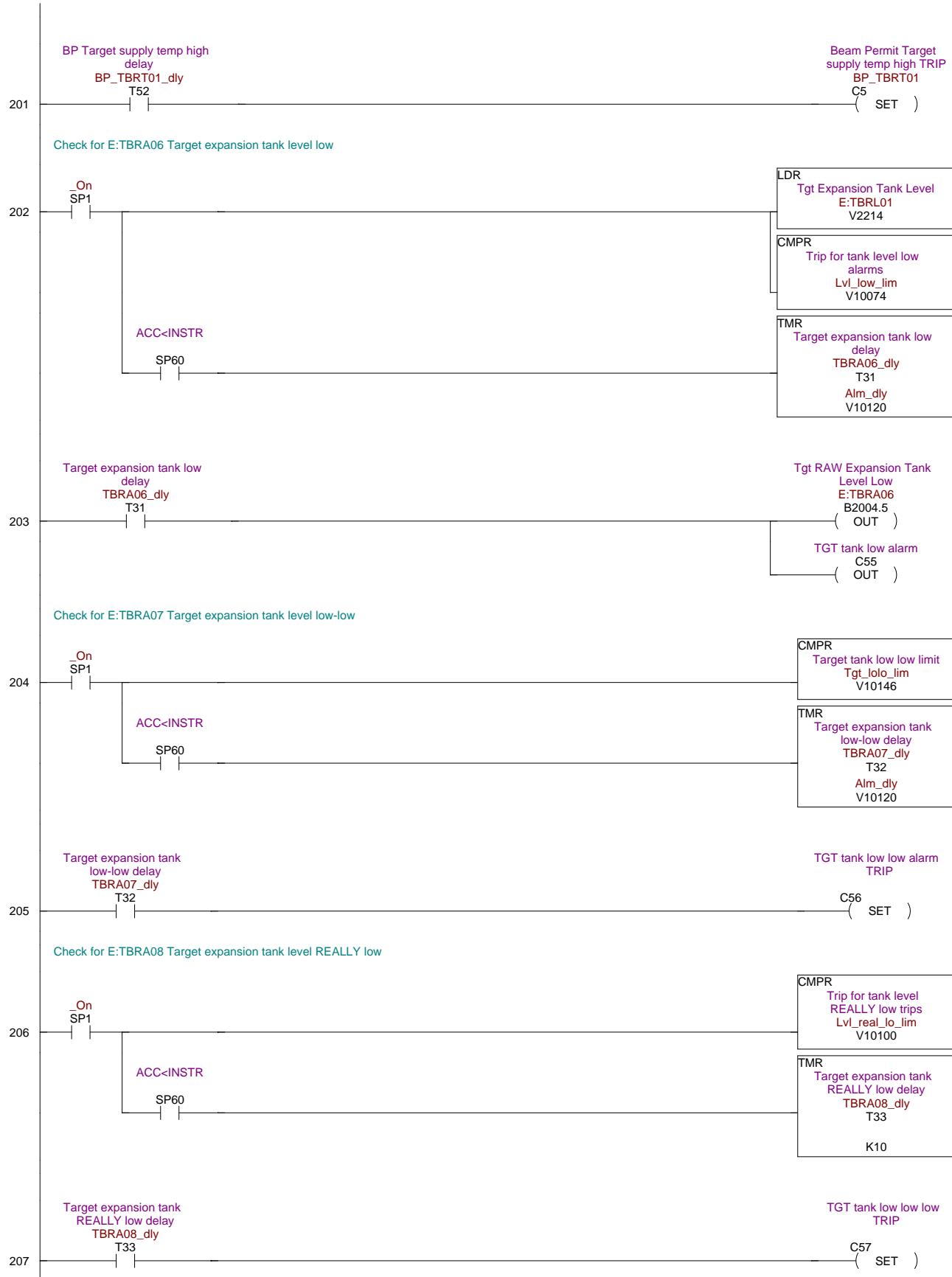


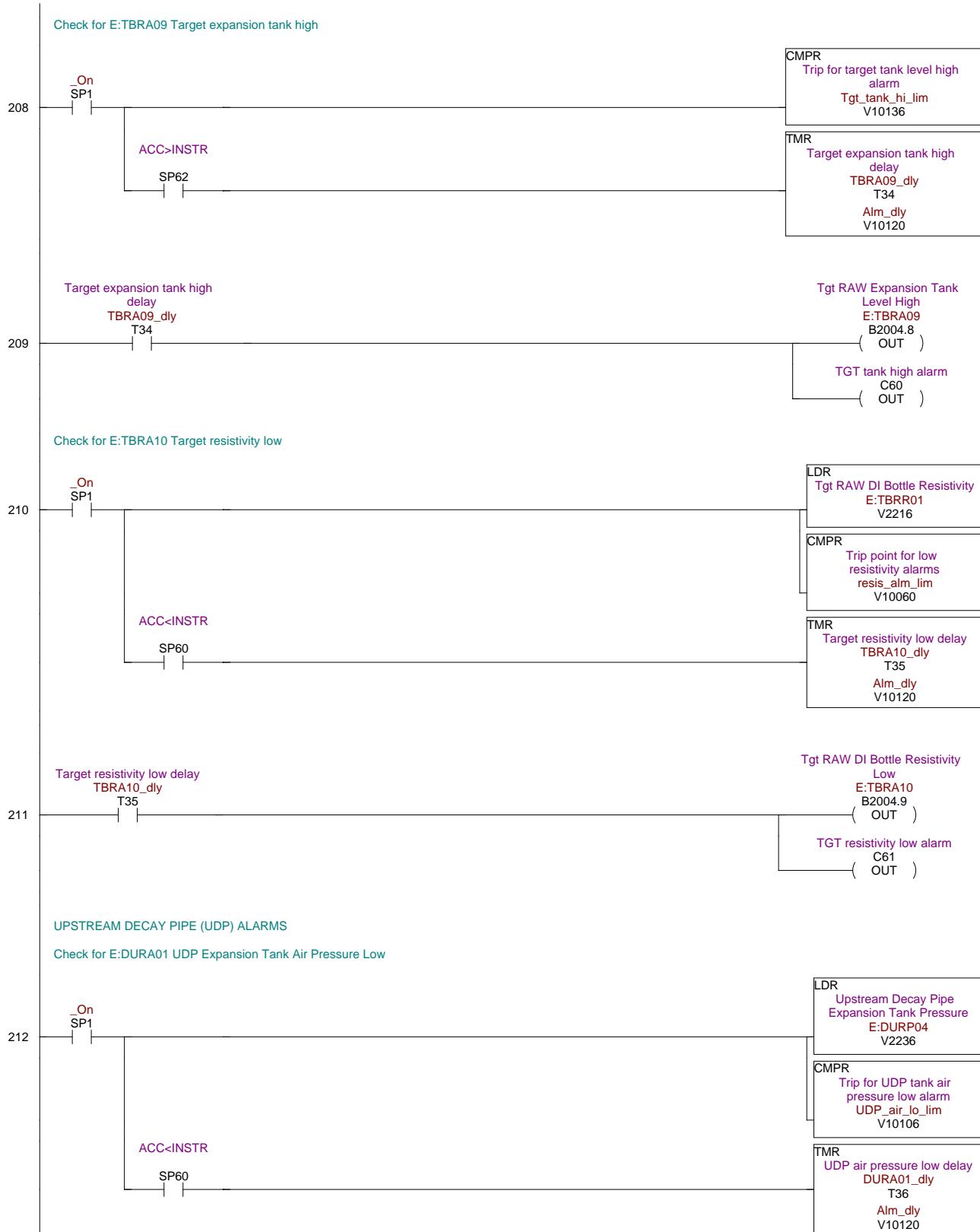
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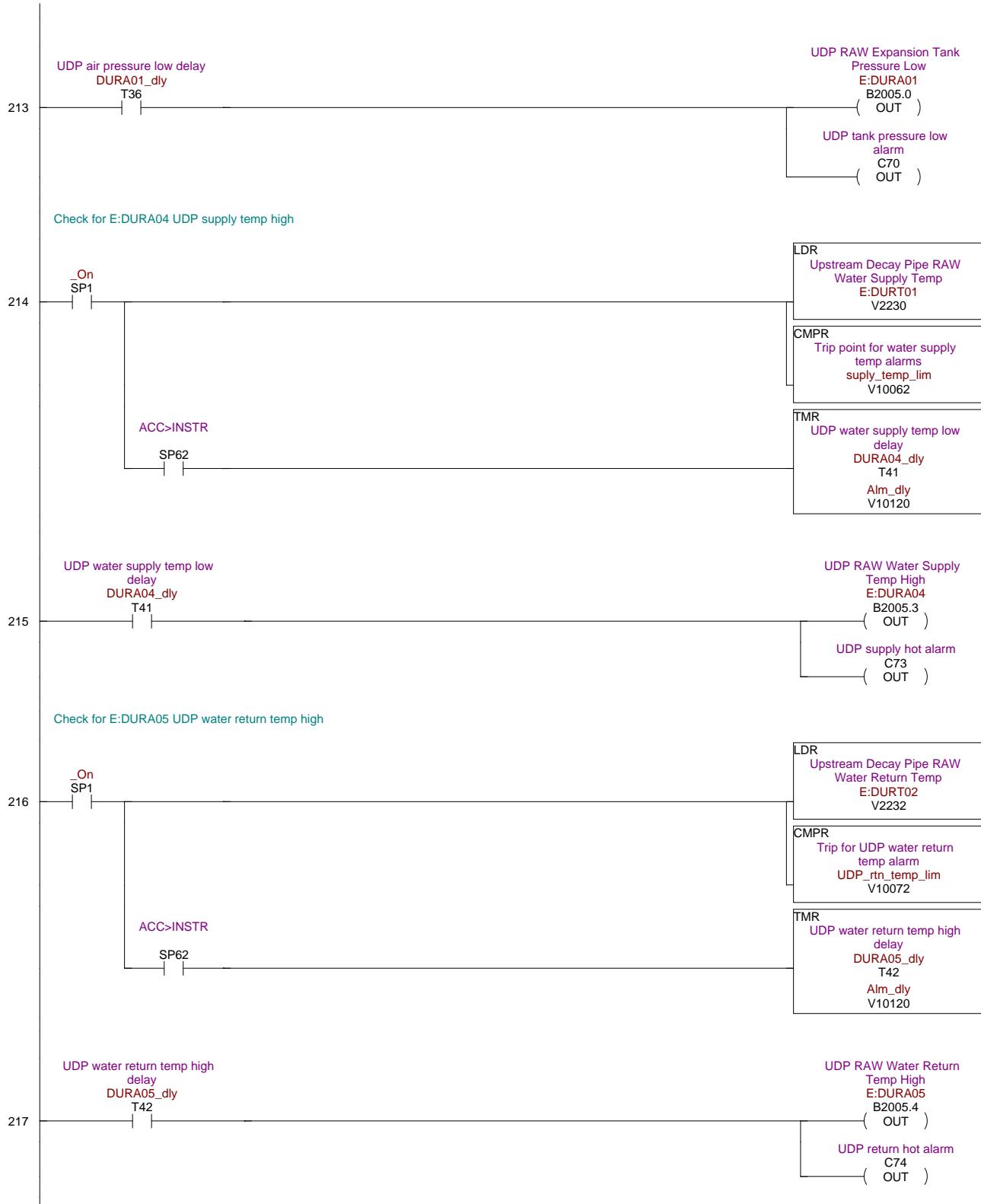
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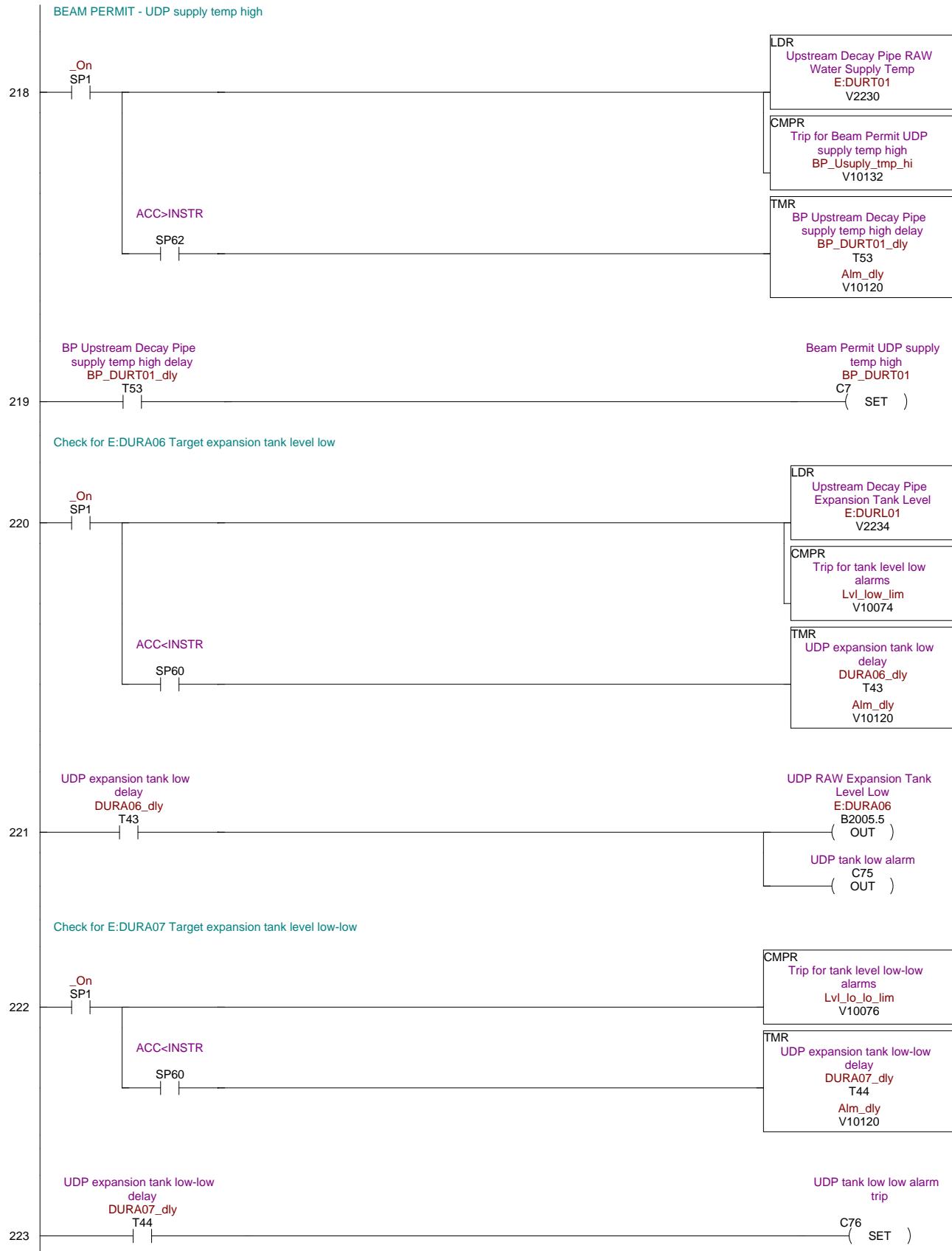
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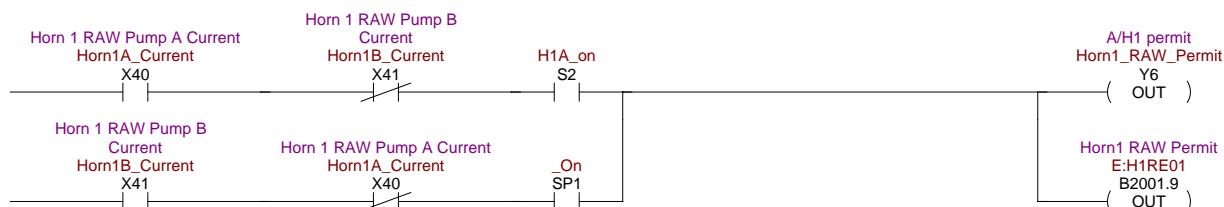
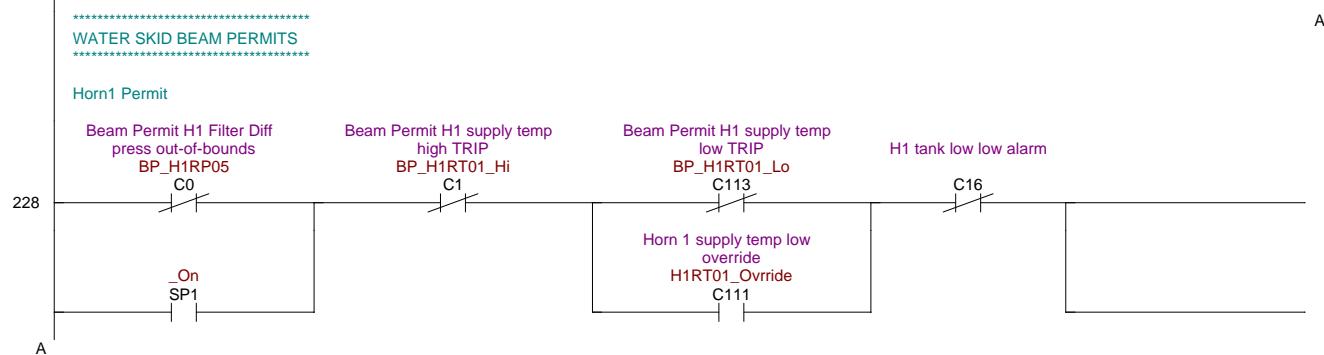
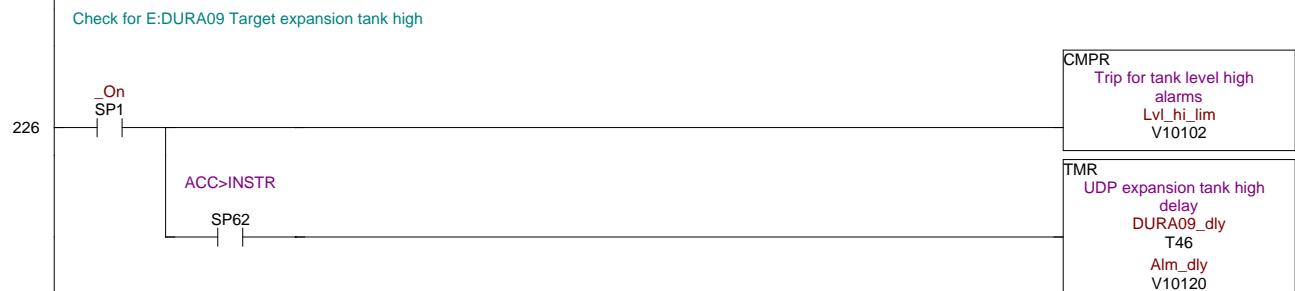
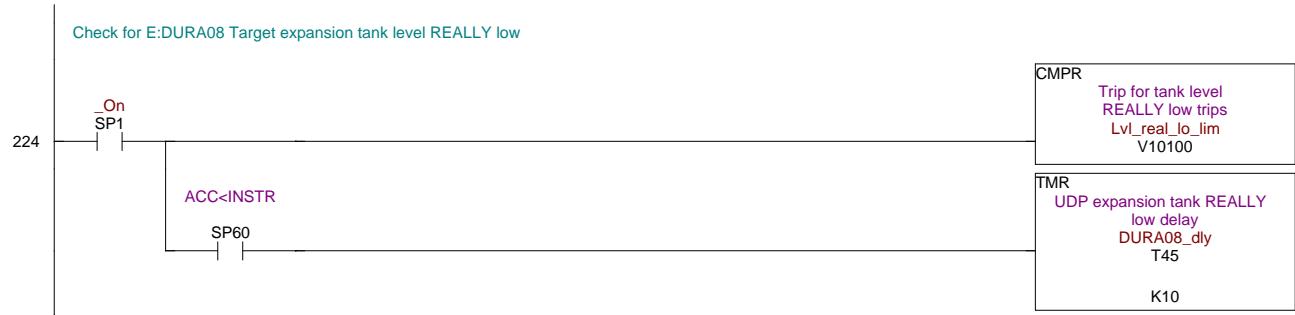


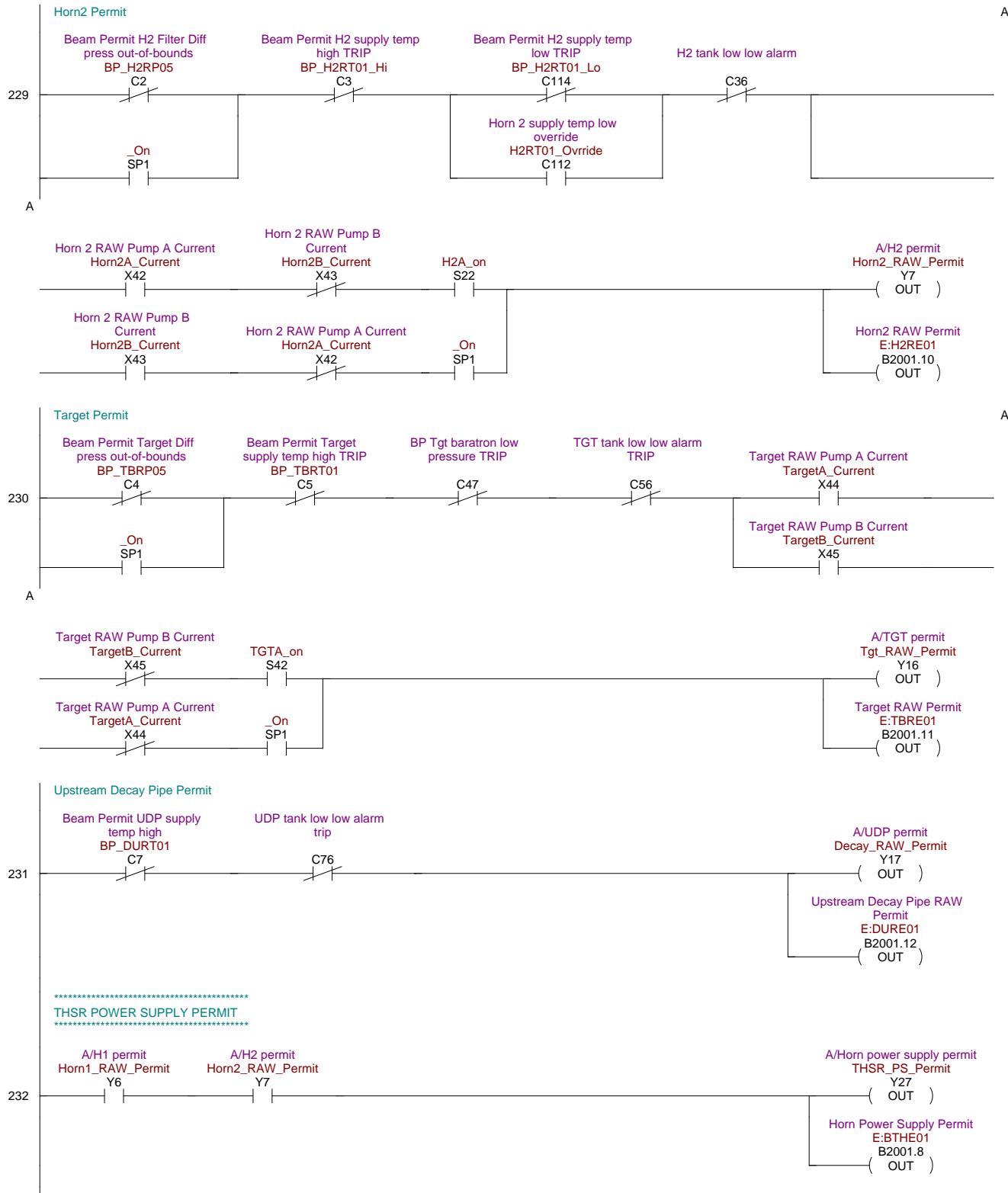








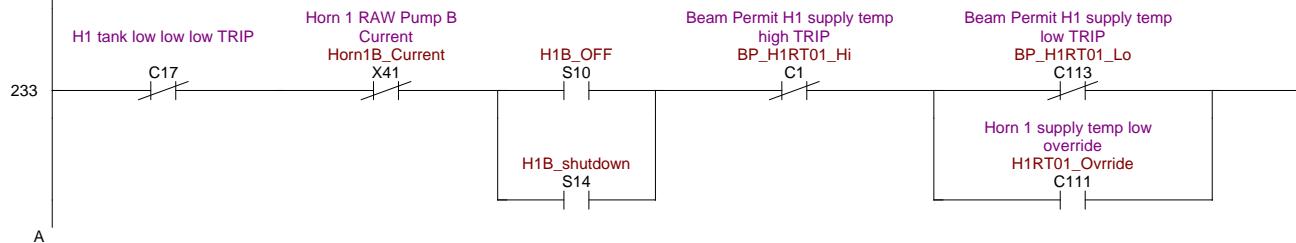
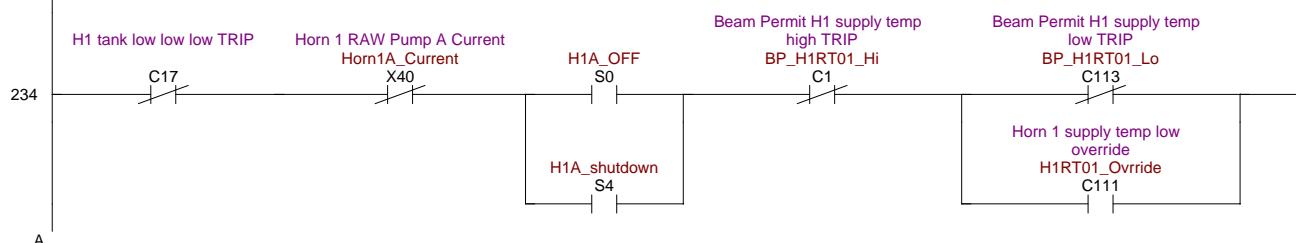
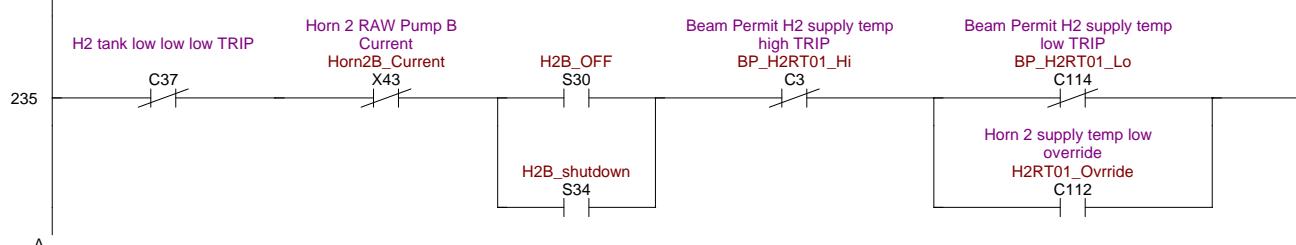




MOTOR CONTROL CENTER INTERLOCKS

Motors are kept from running by 1) low water in the tank 2) other motor not in a stopped state 3) other motor drawing nominal current 4) supply temp out-of-bounds (H1 and H2). An override for each horn, accessible only from the local display panel, allows the motors to run if the water is too cold.

The interlock contact must be physically jumped to manually override the interlock.

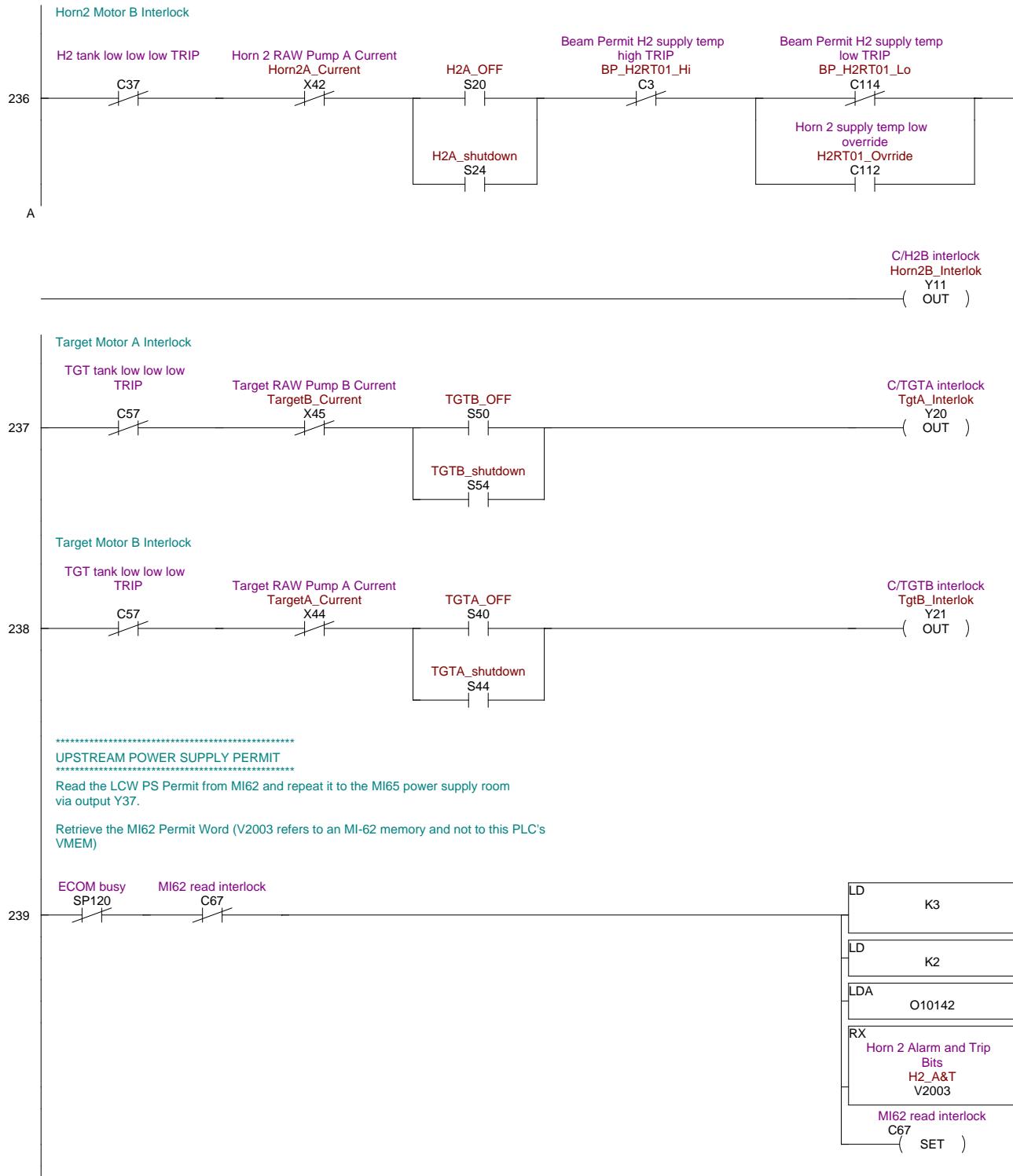
Horn1 Motor A Interlock

Horn1 Motor B Interlock

Horn2 Motor A Interlock


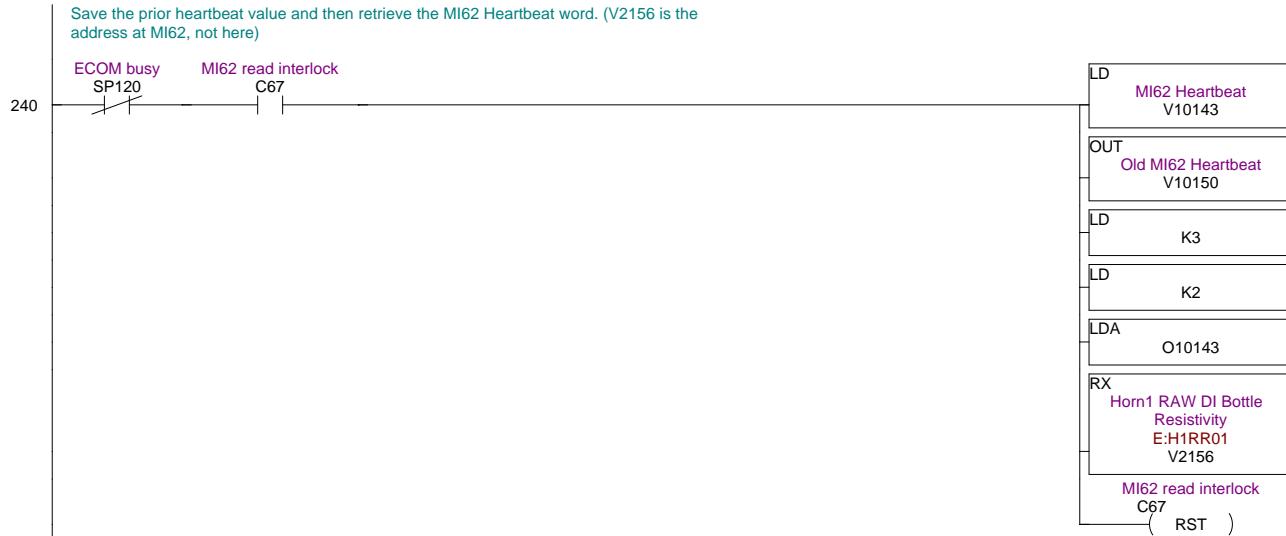
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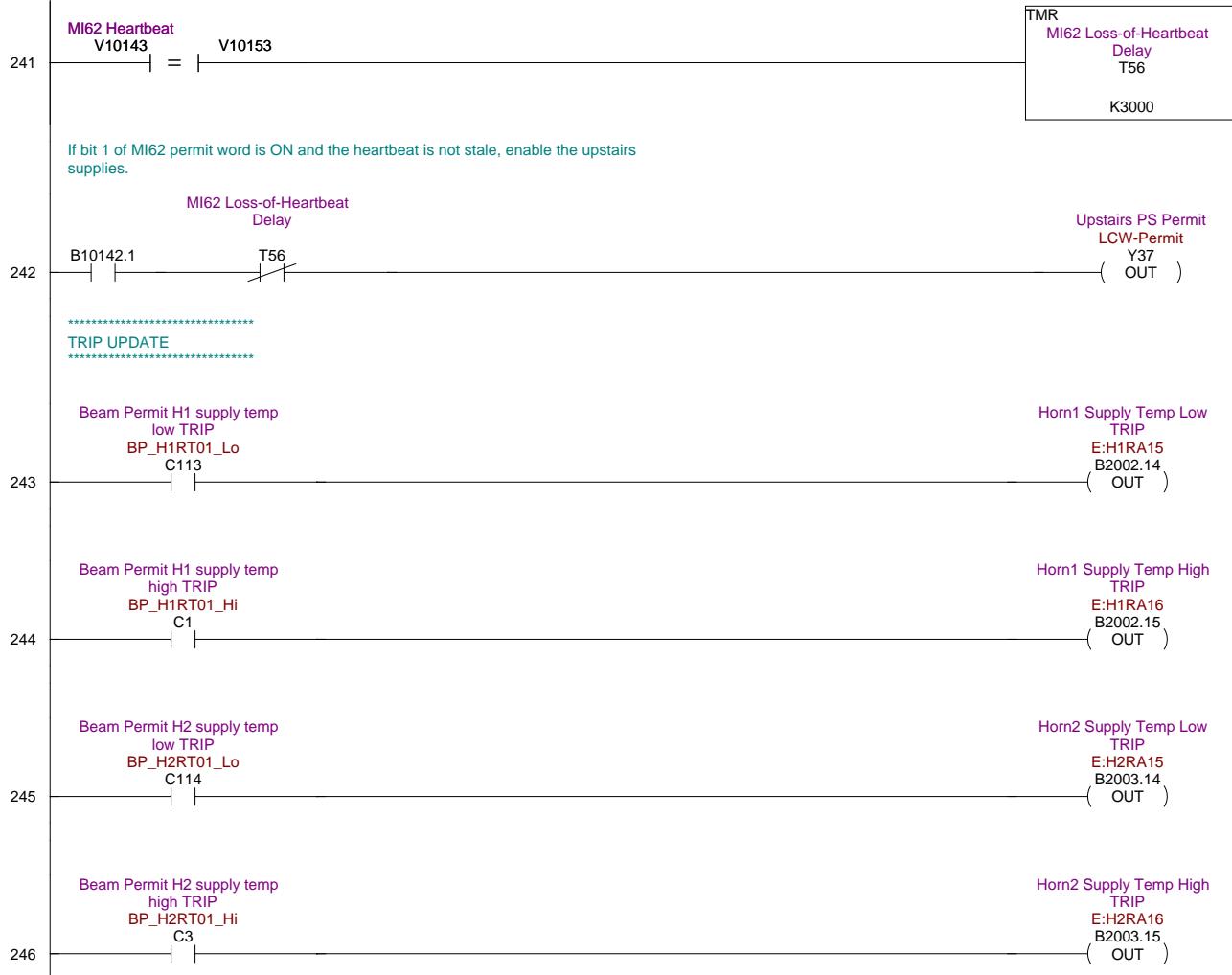
thsr_lcw

A





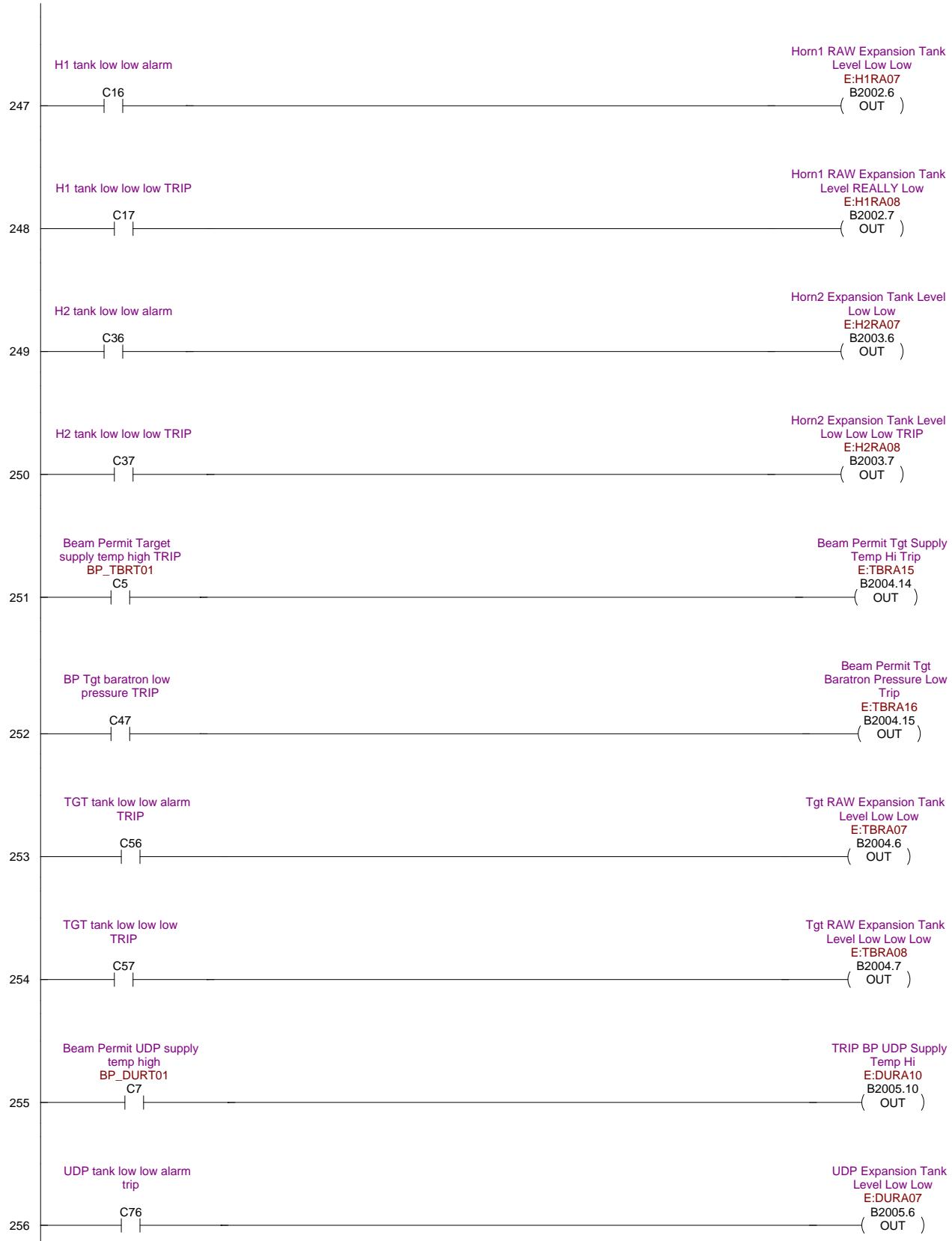
The MI62 heartbeat is deemed stale and MI62 is AWOL if the old and the current values are identical for at least 5 minutes.



7/11/2006

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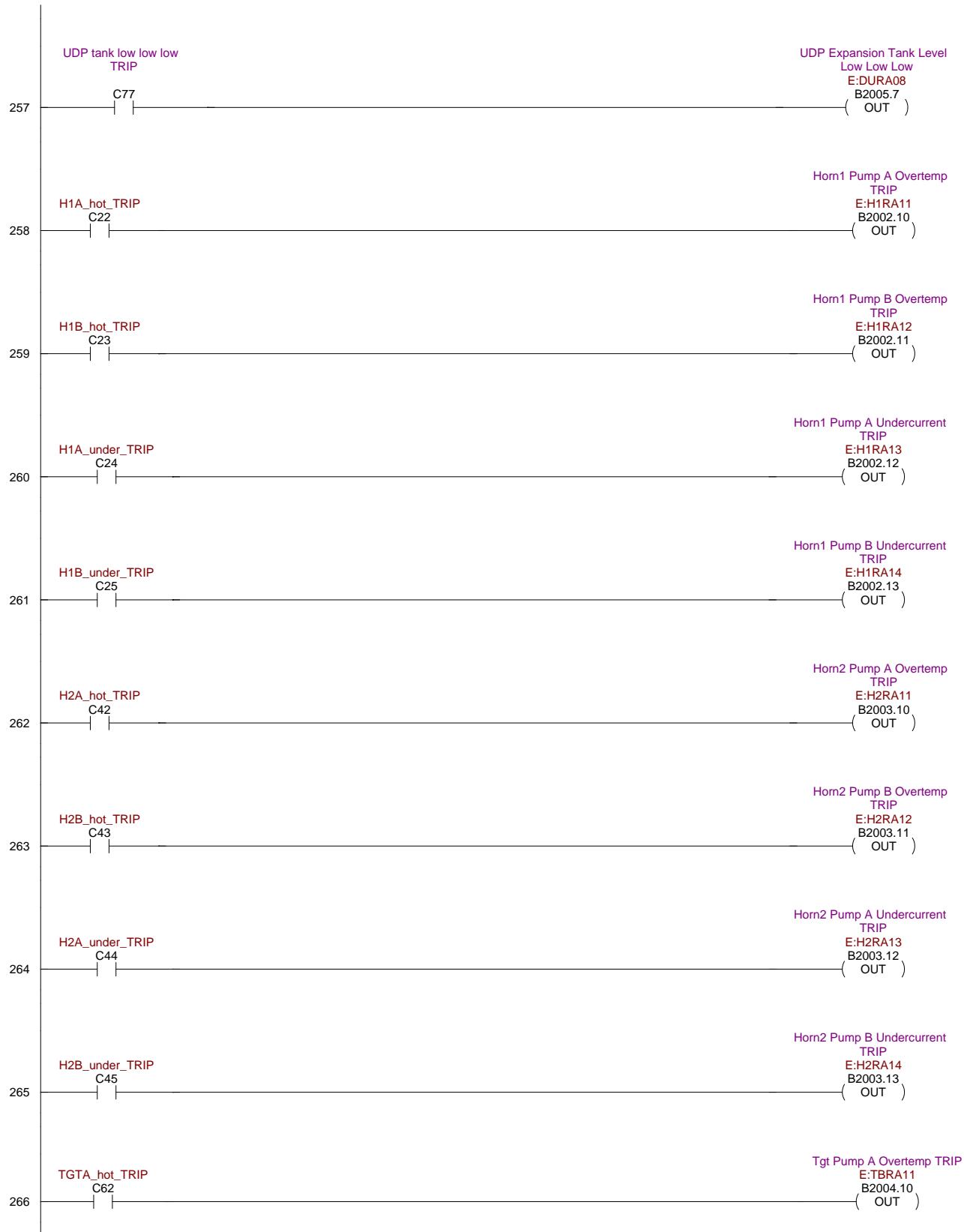
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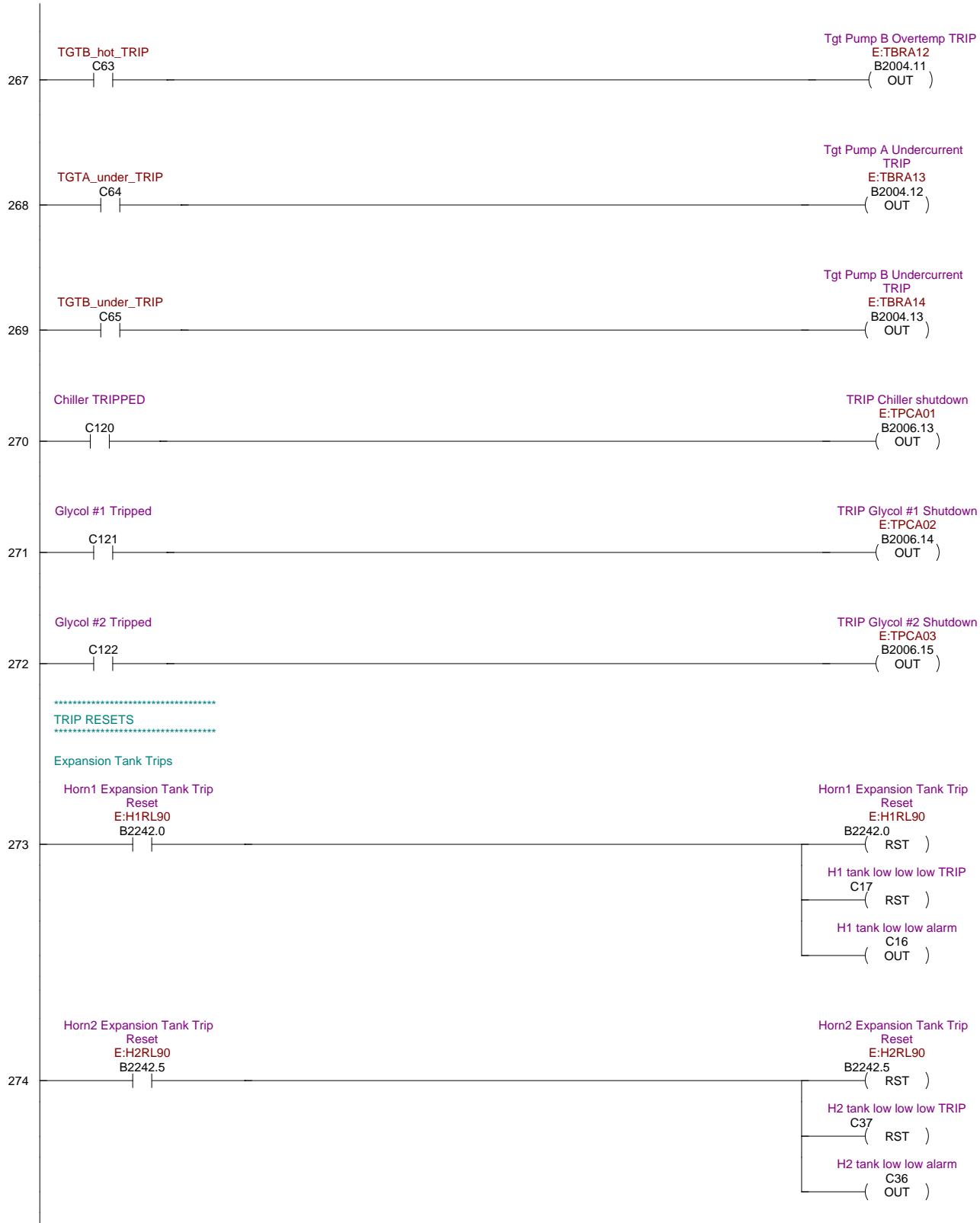


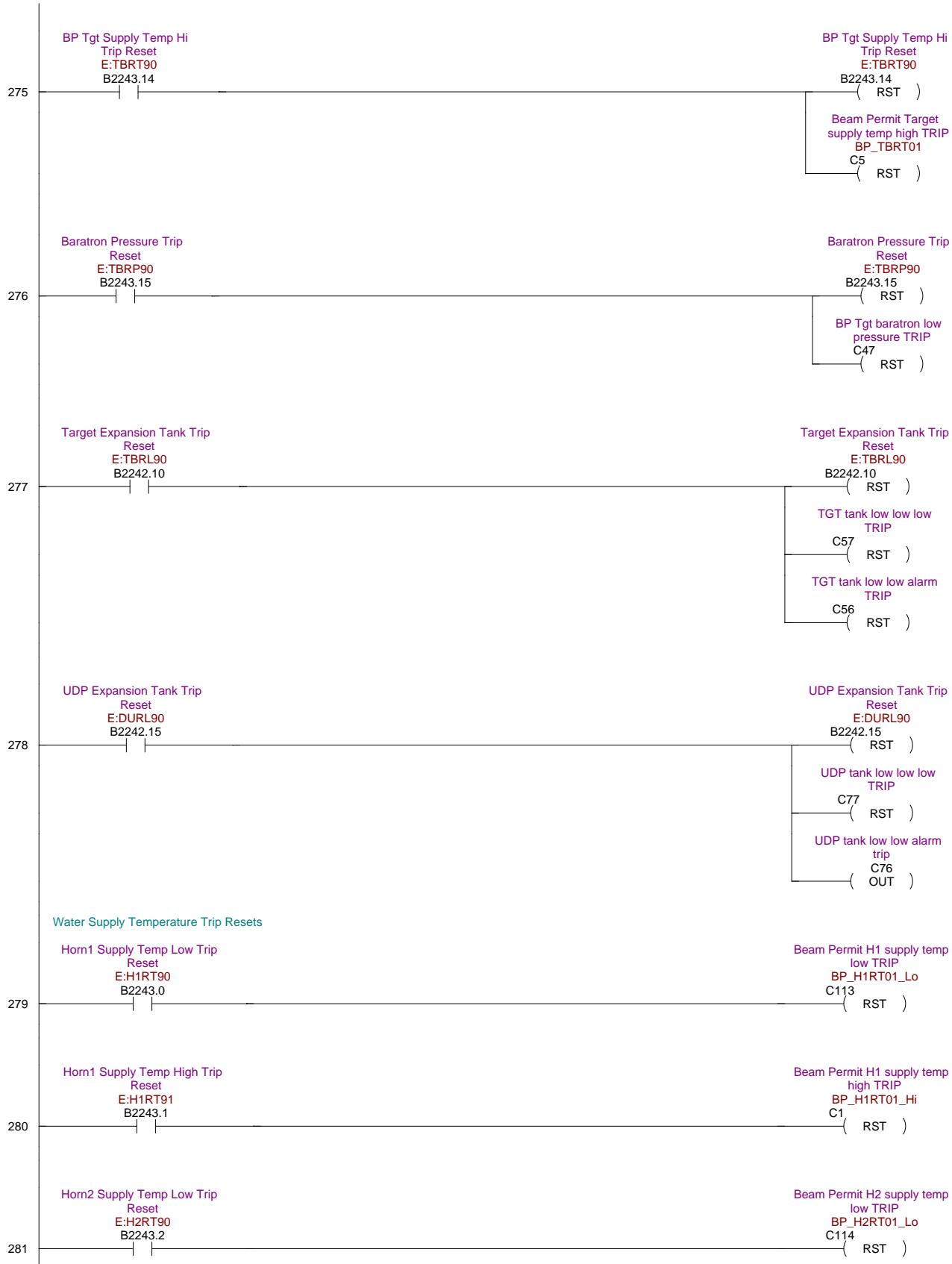
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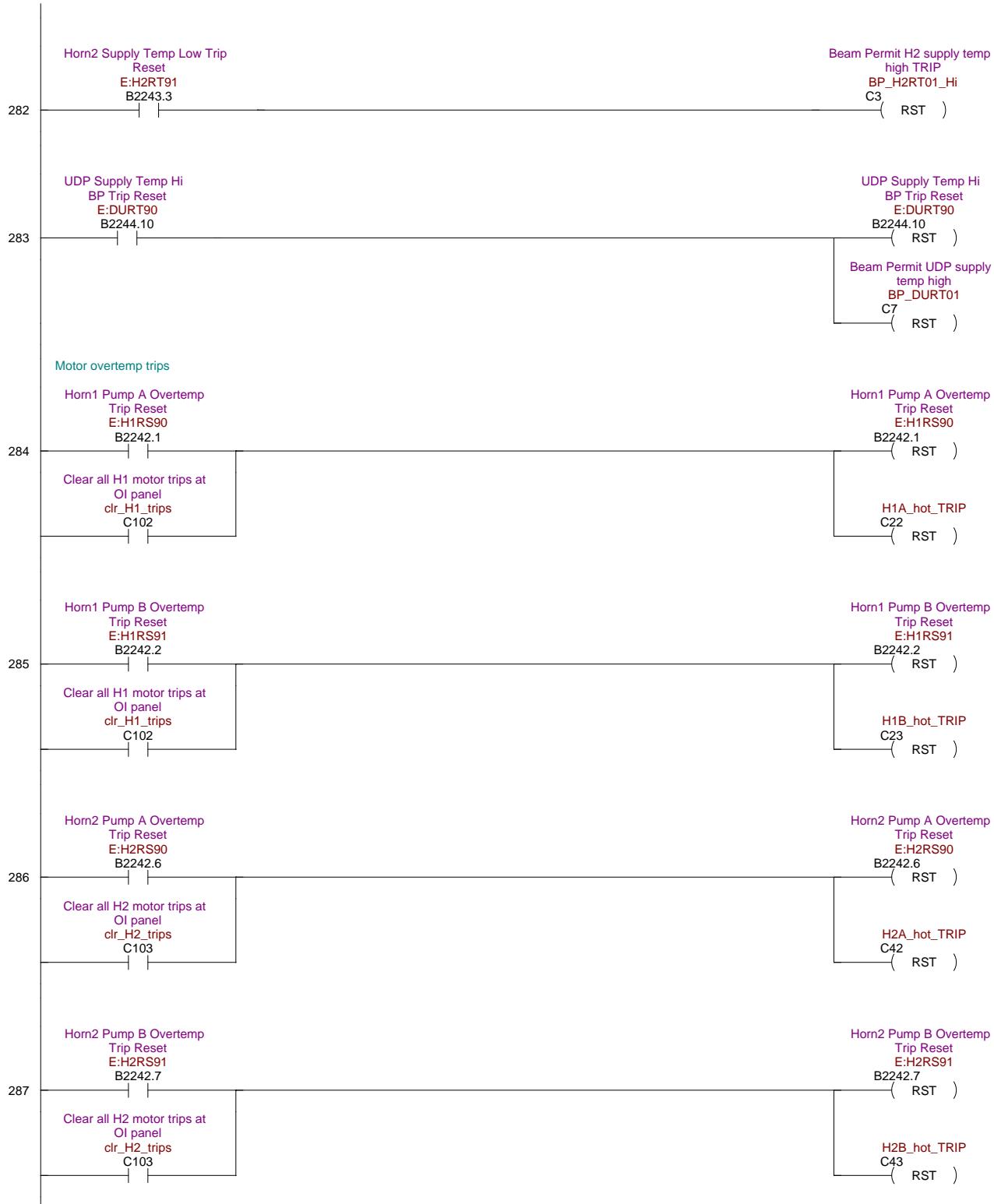
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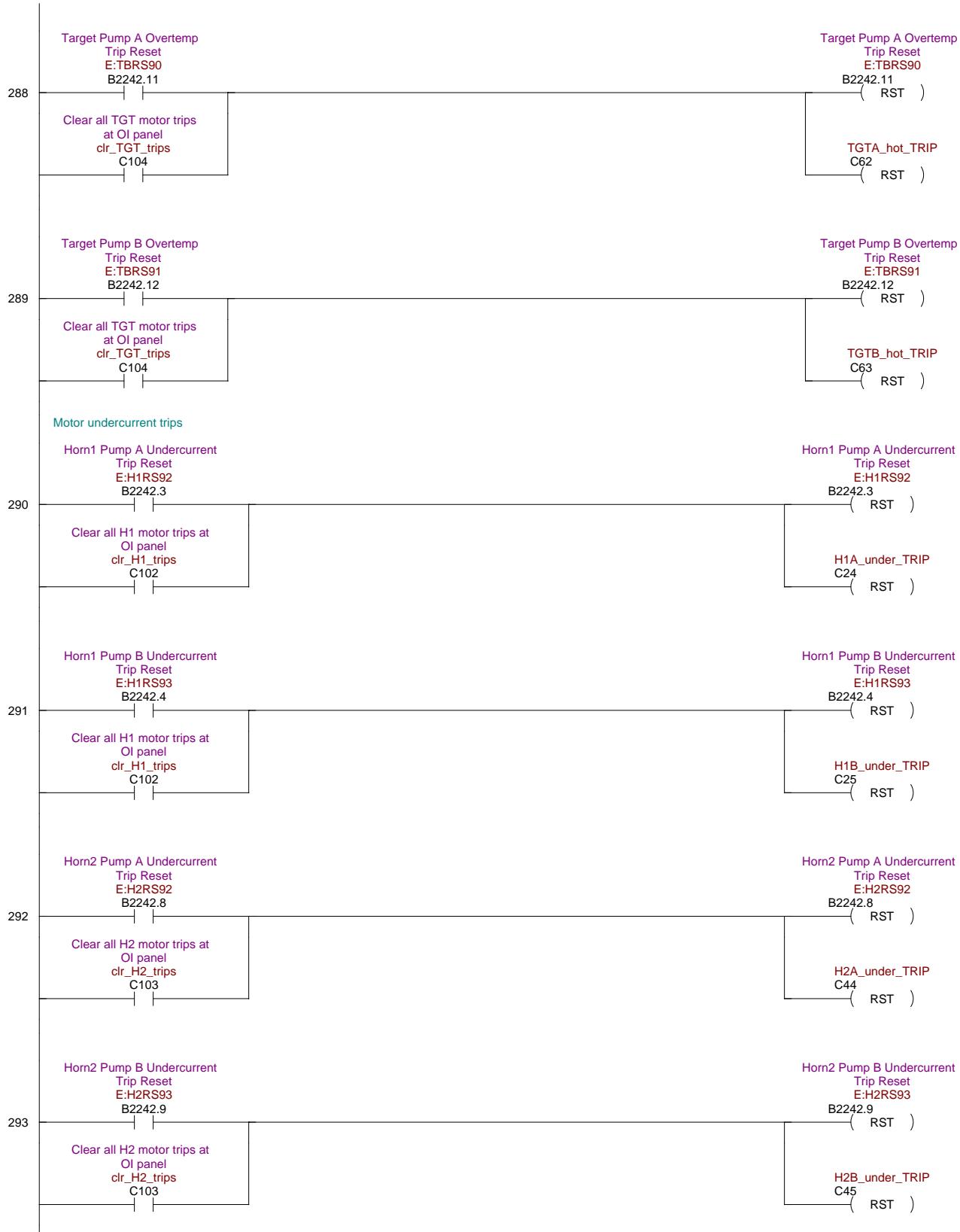
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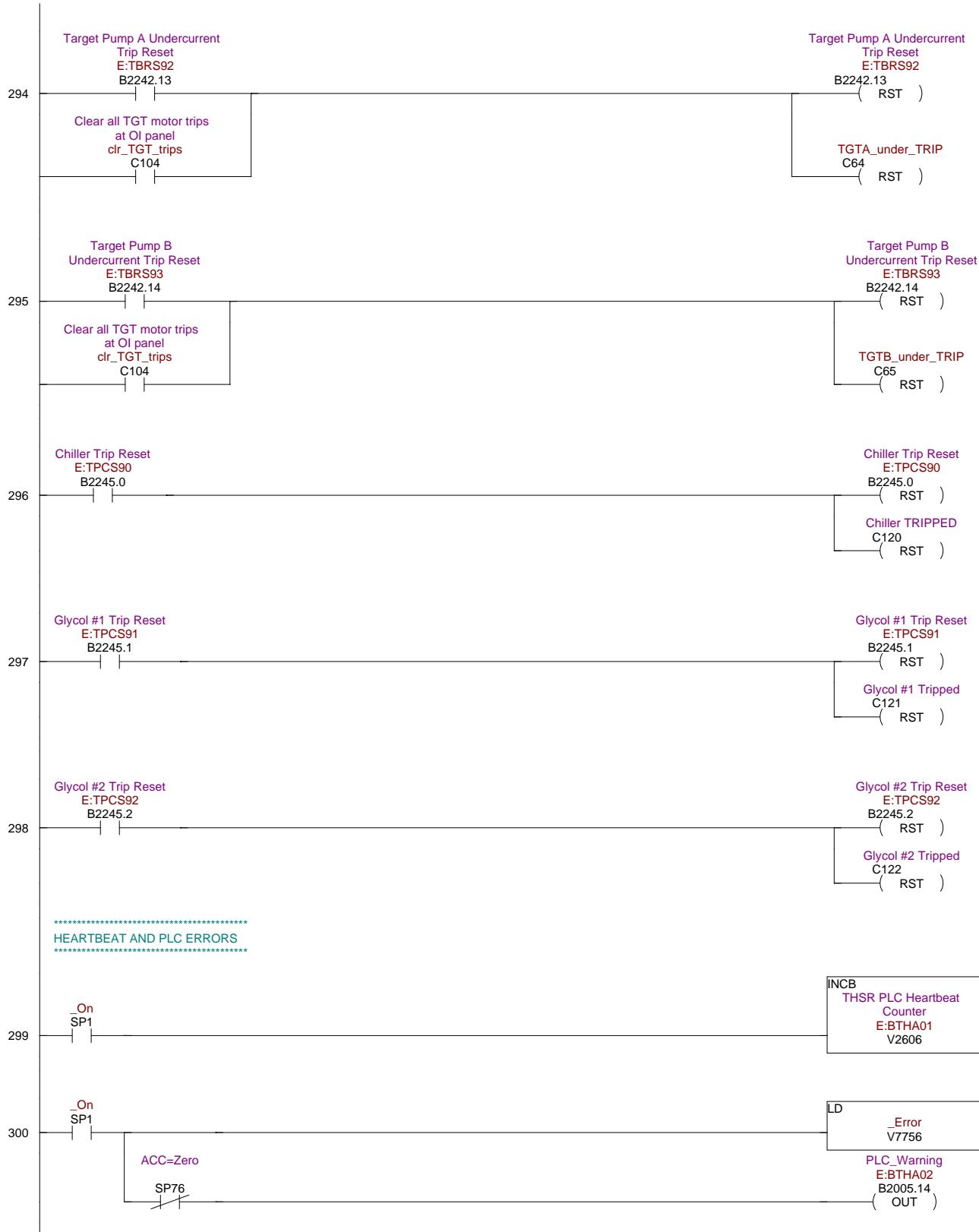


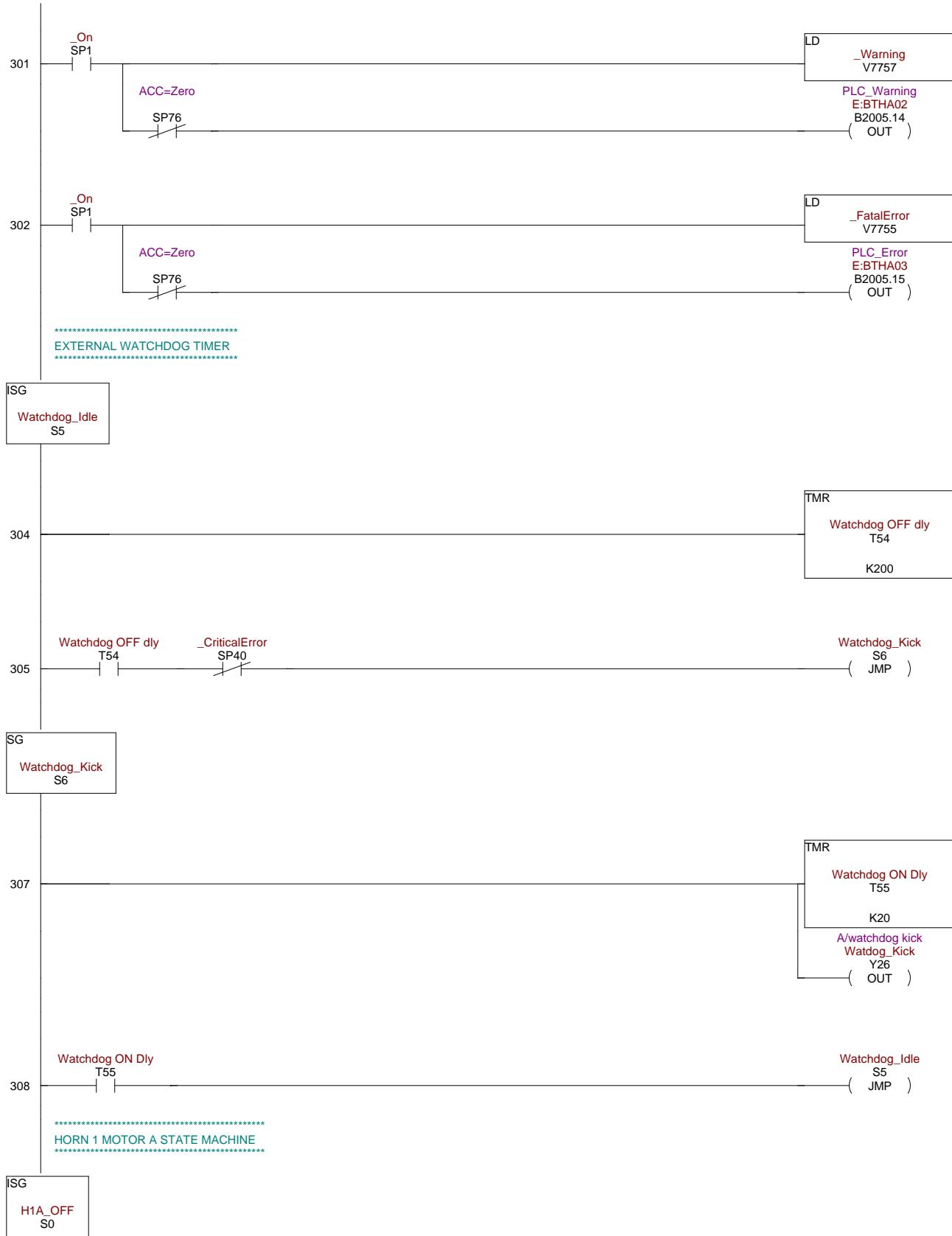


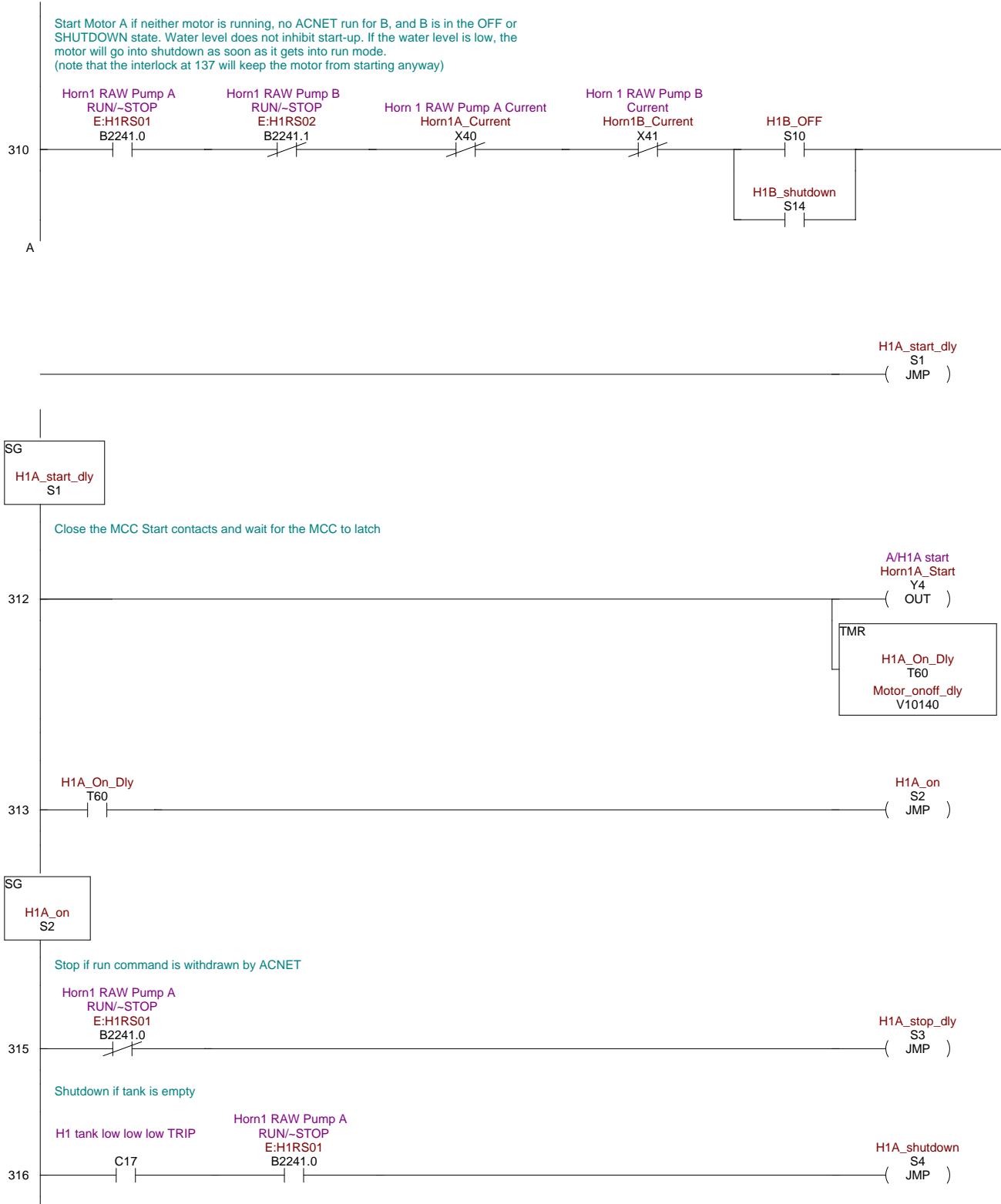


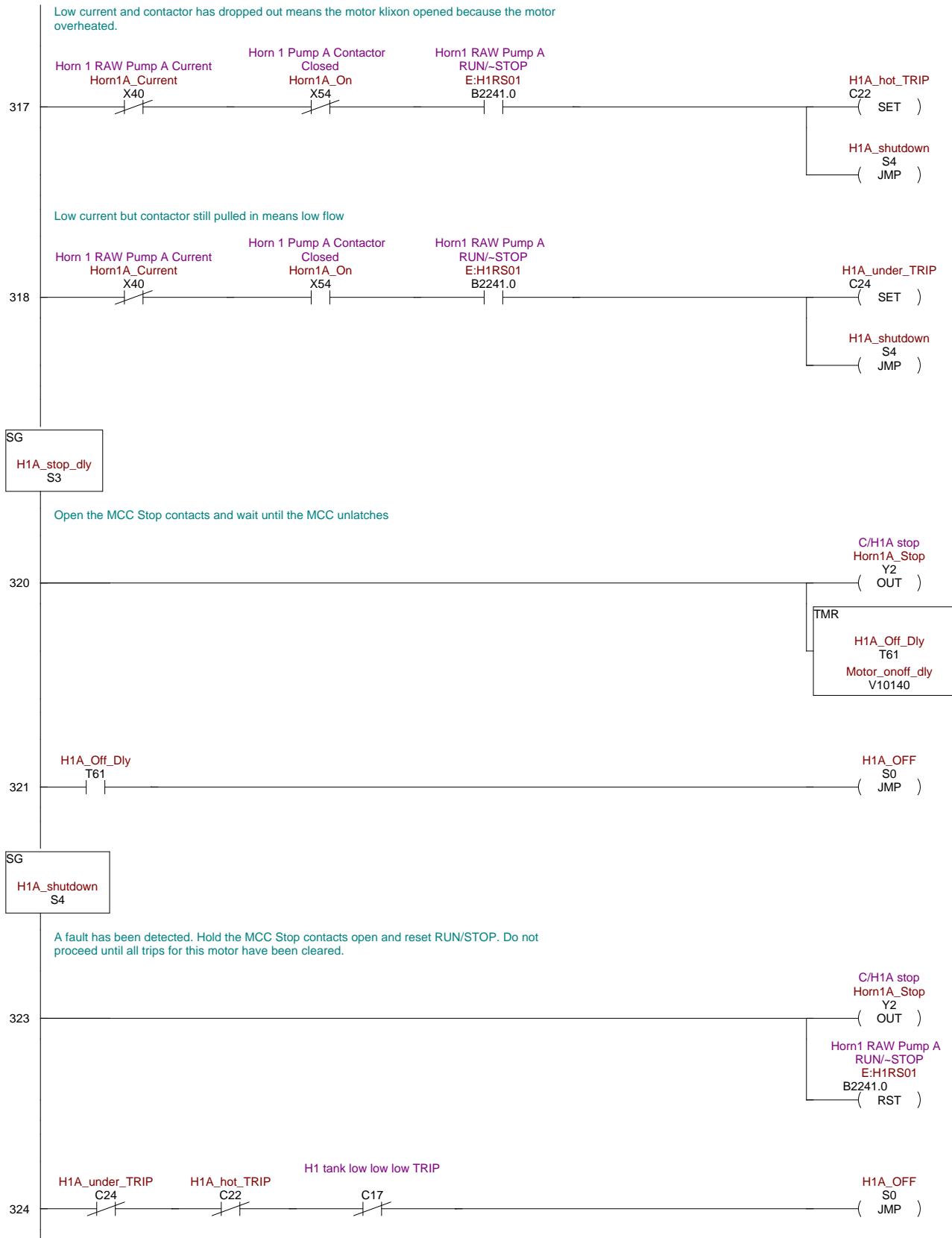


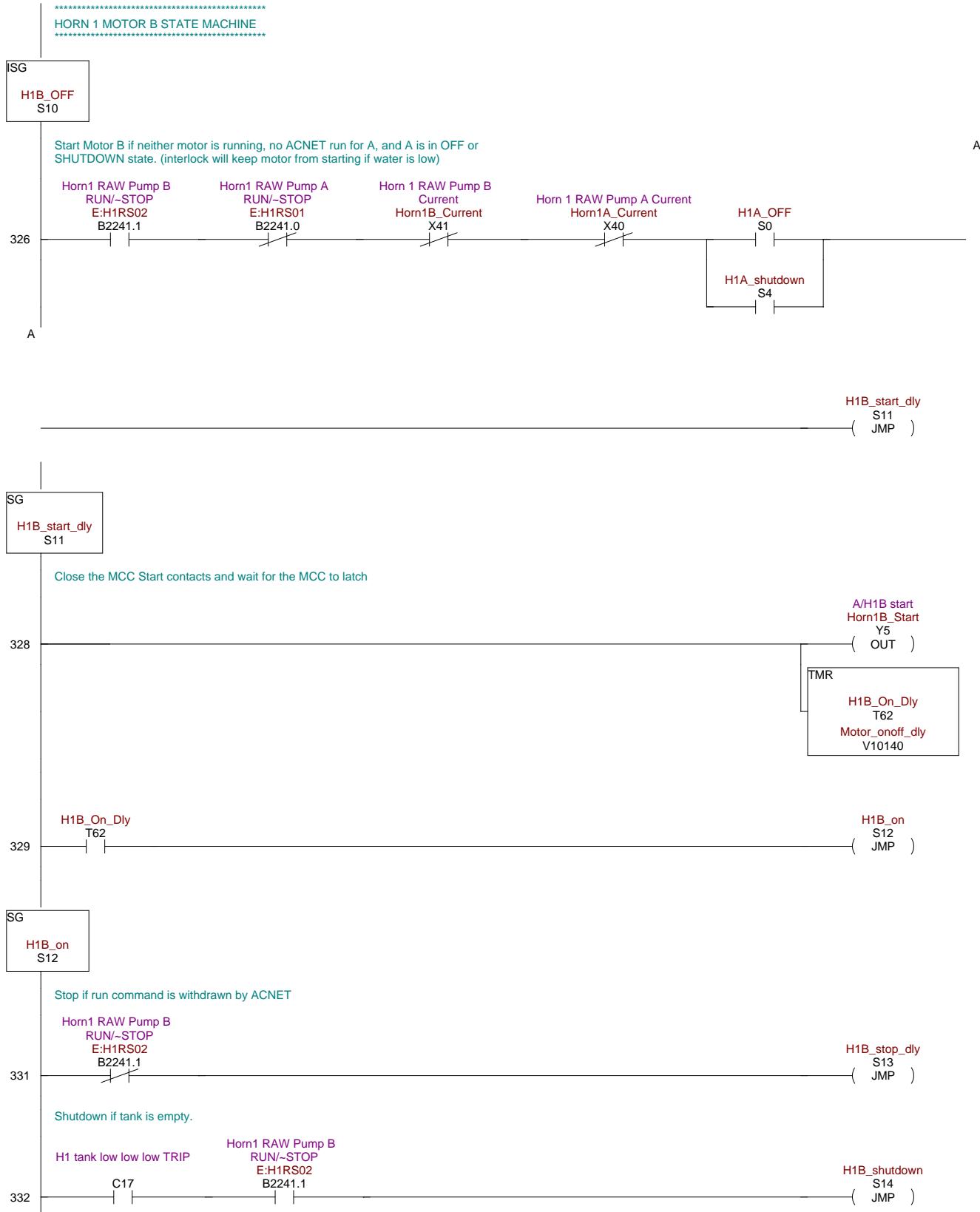


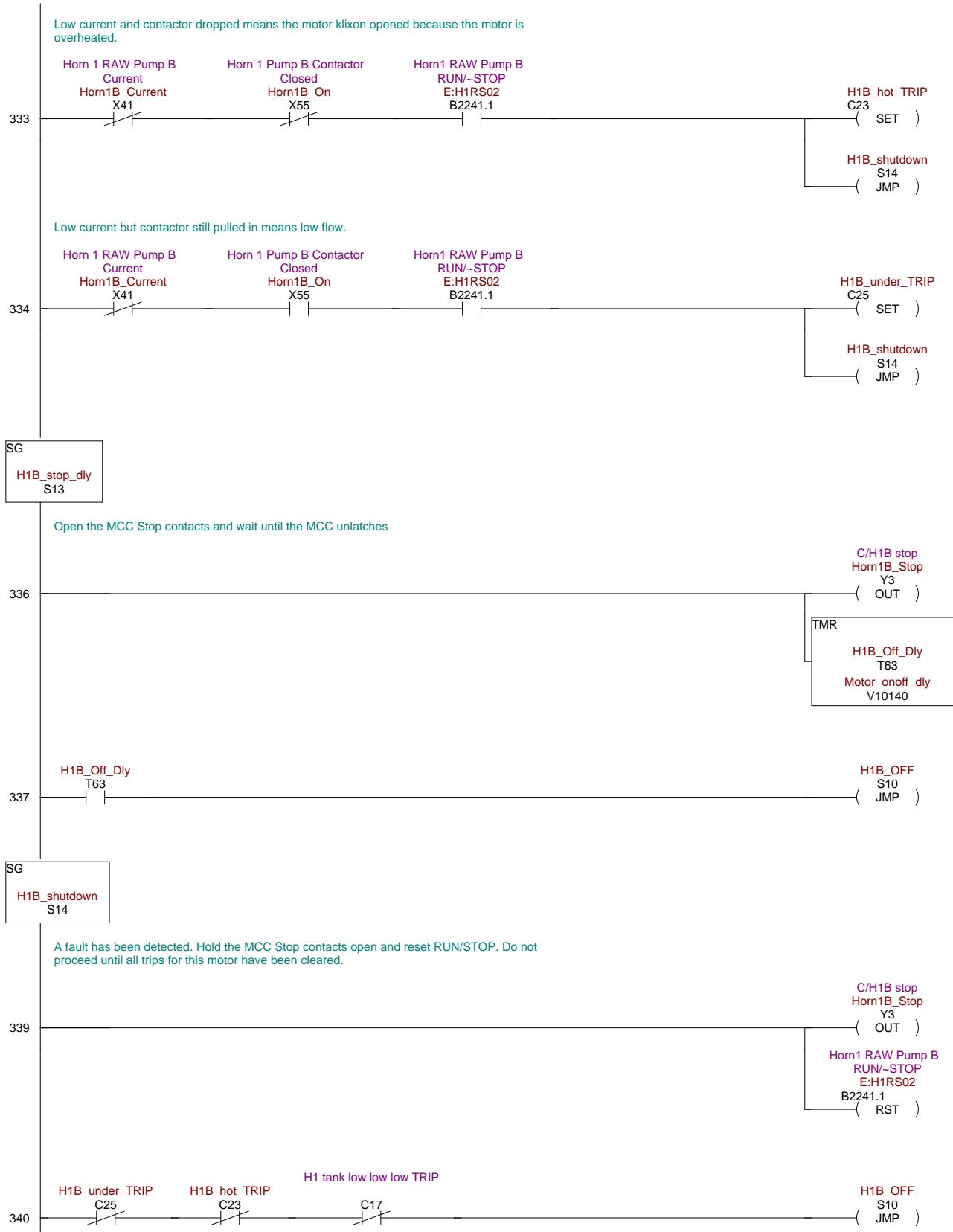


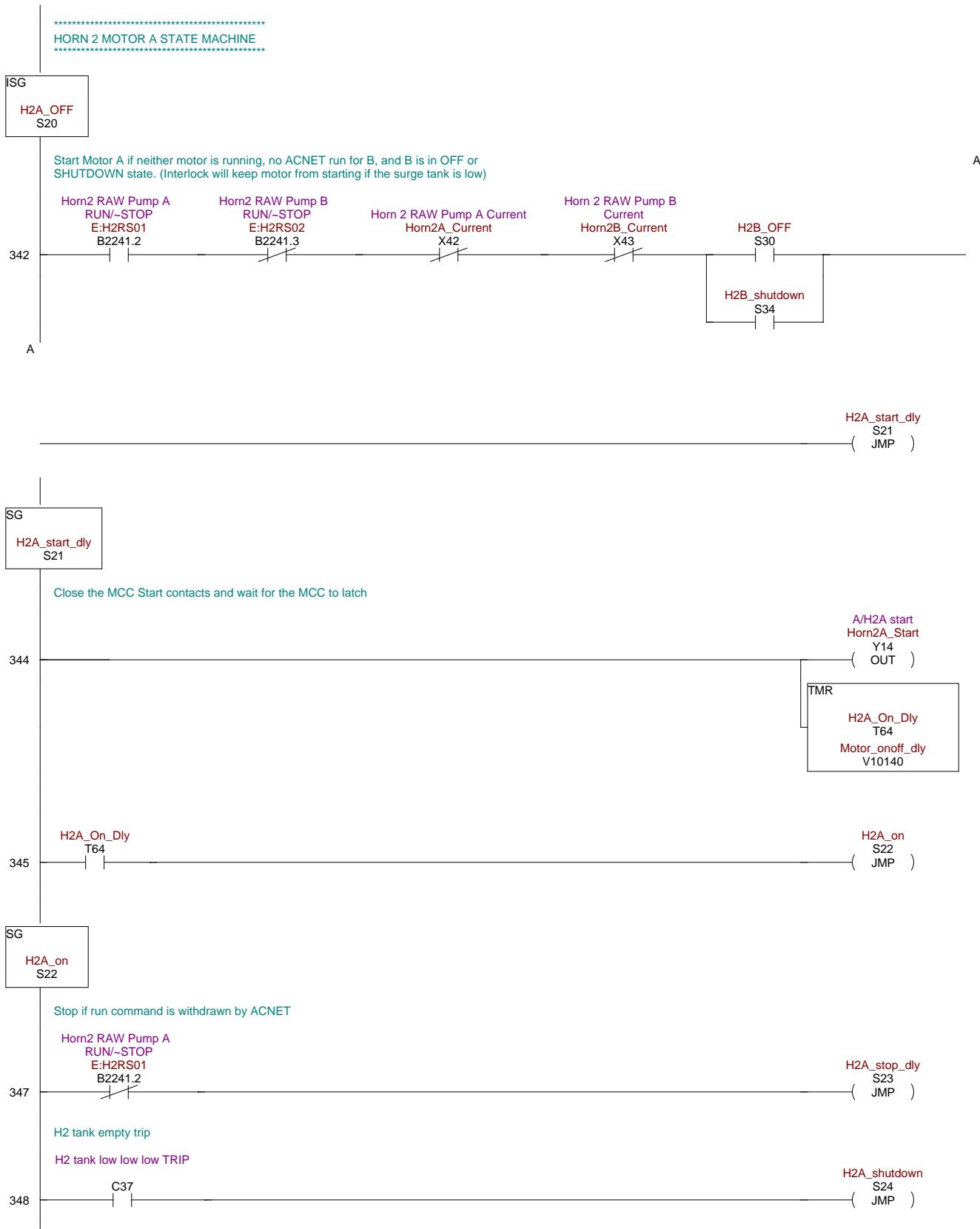


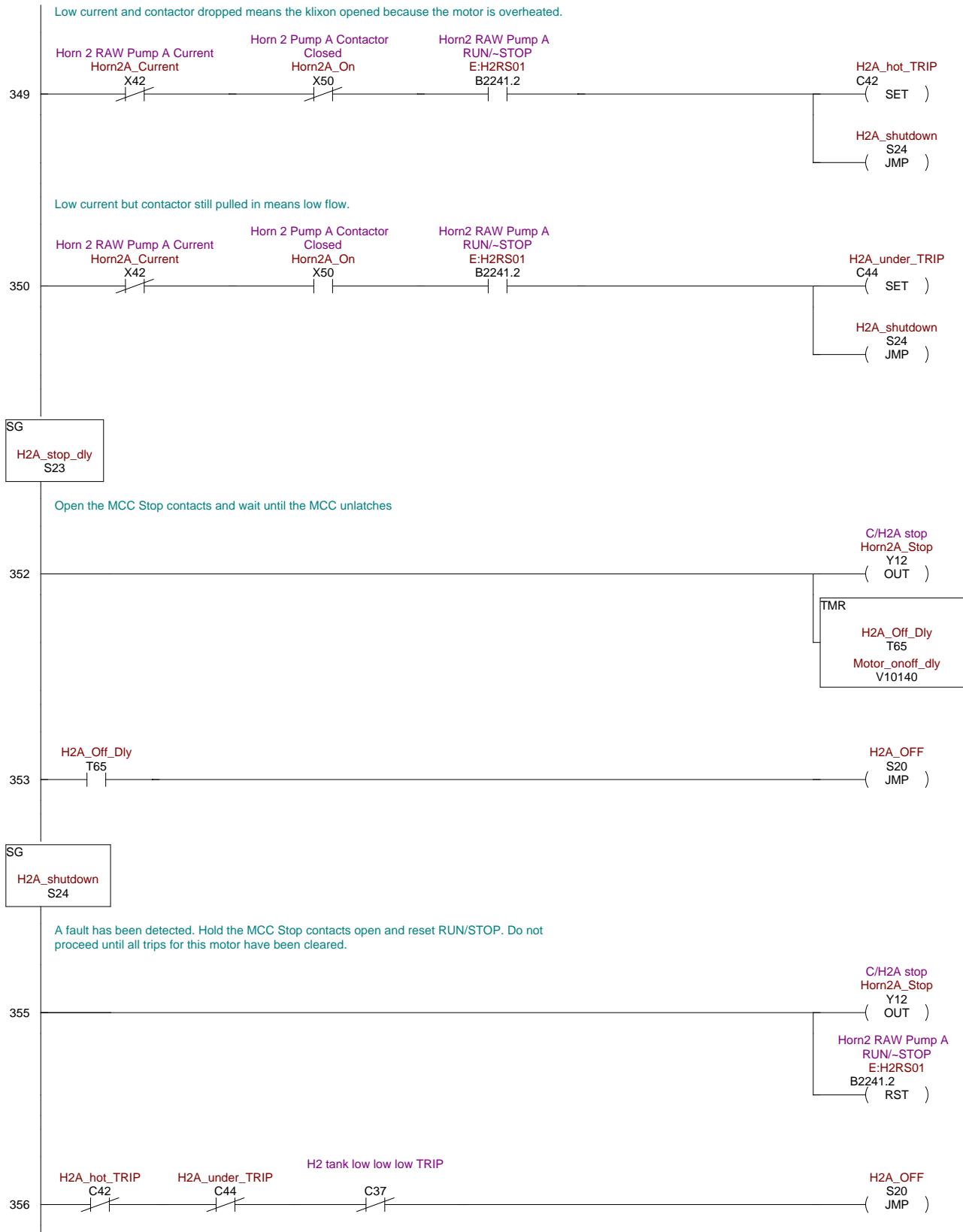


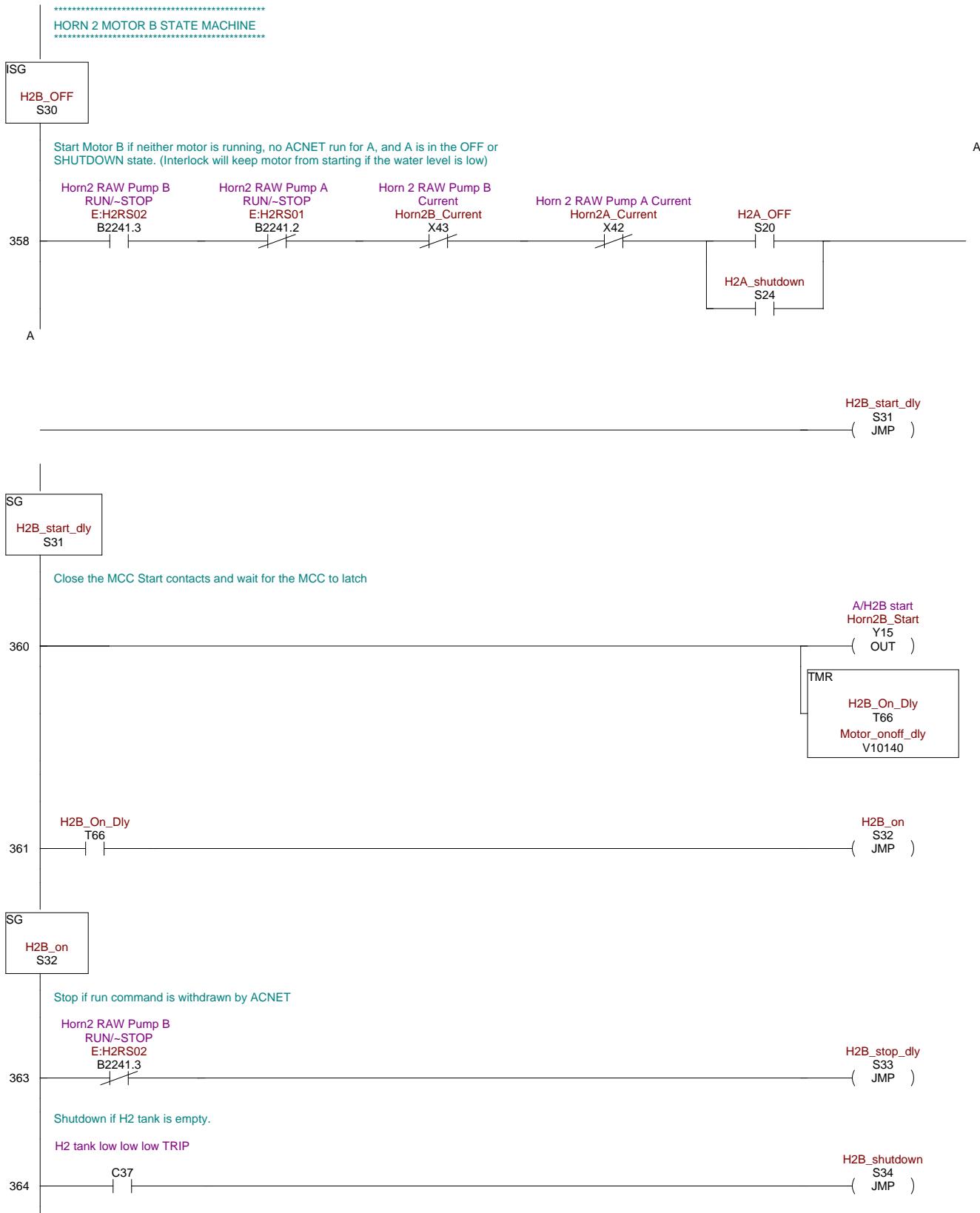


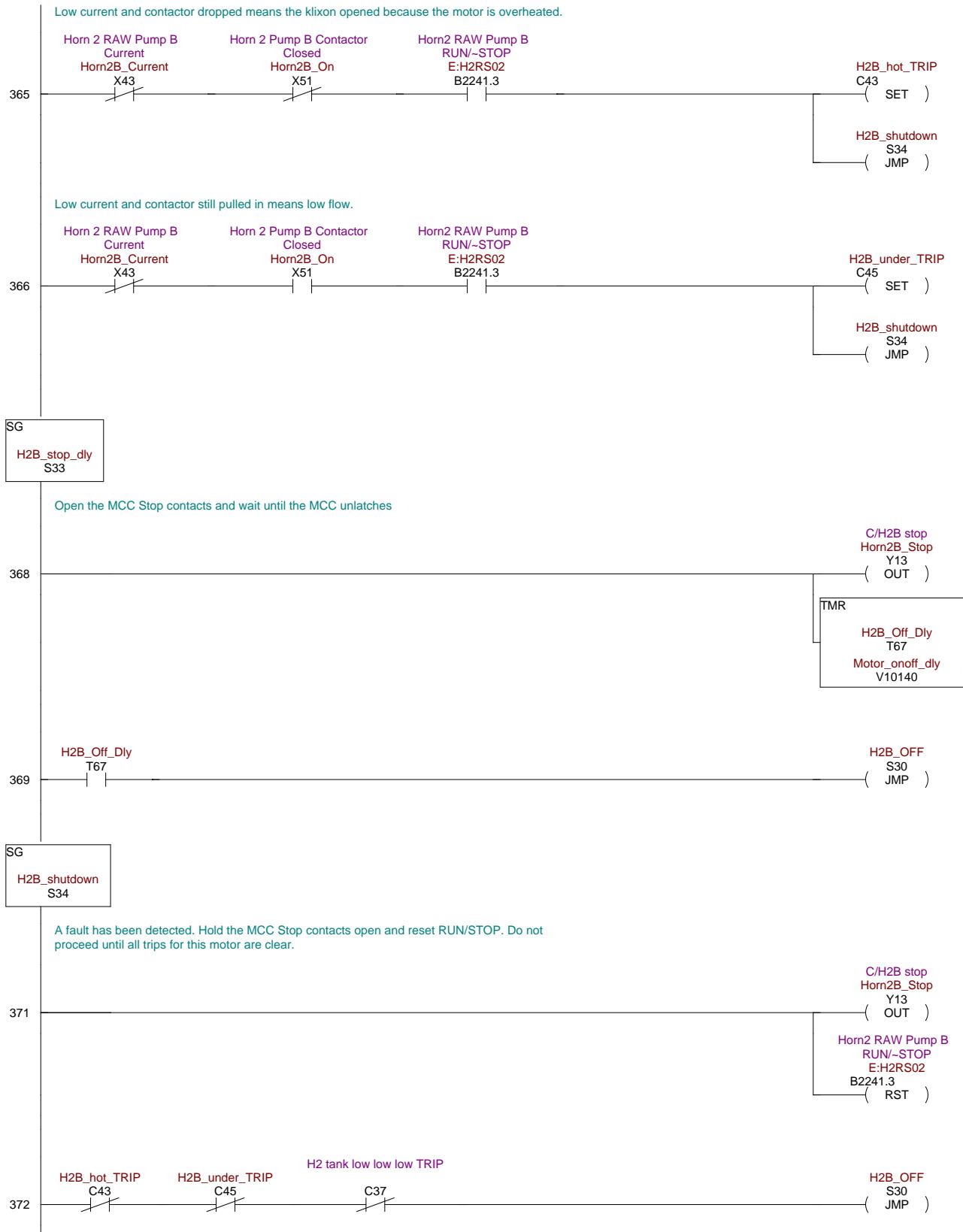


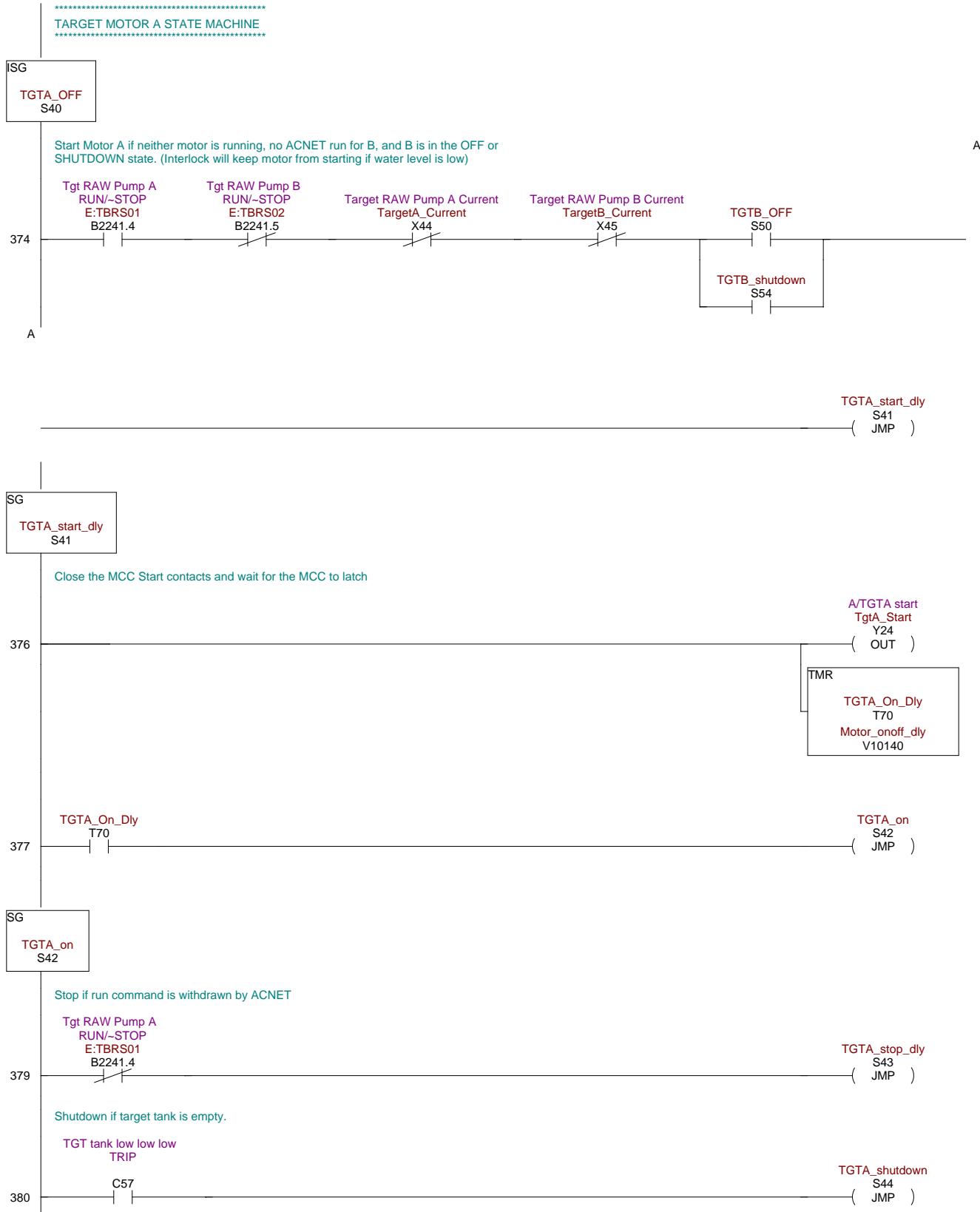


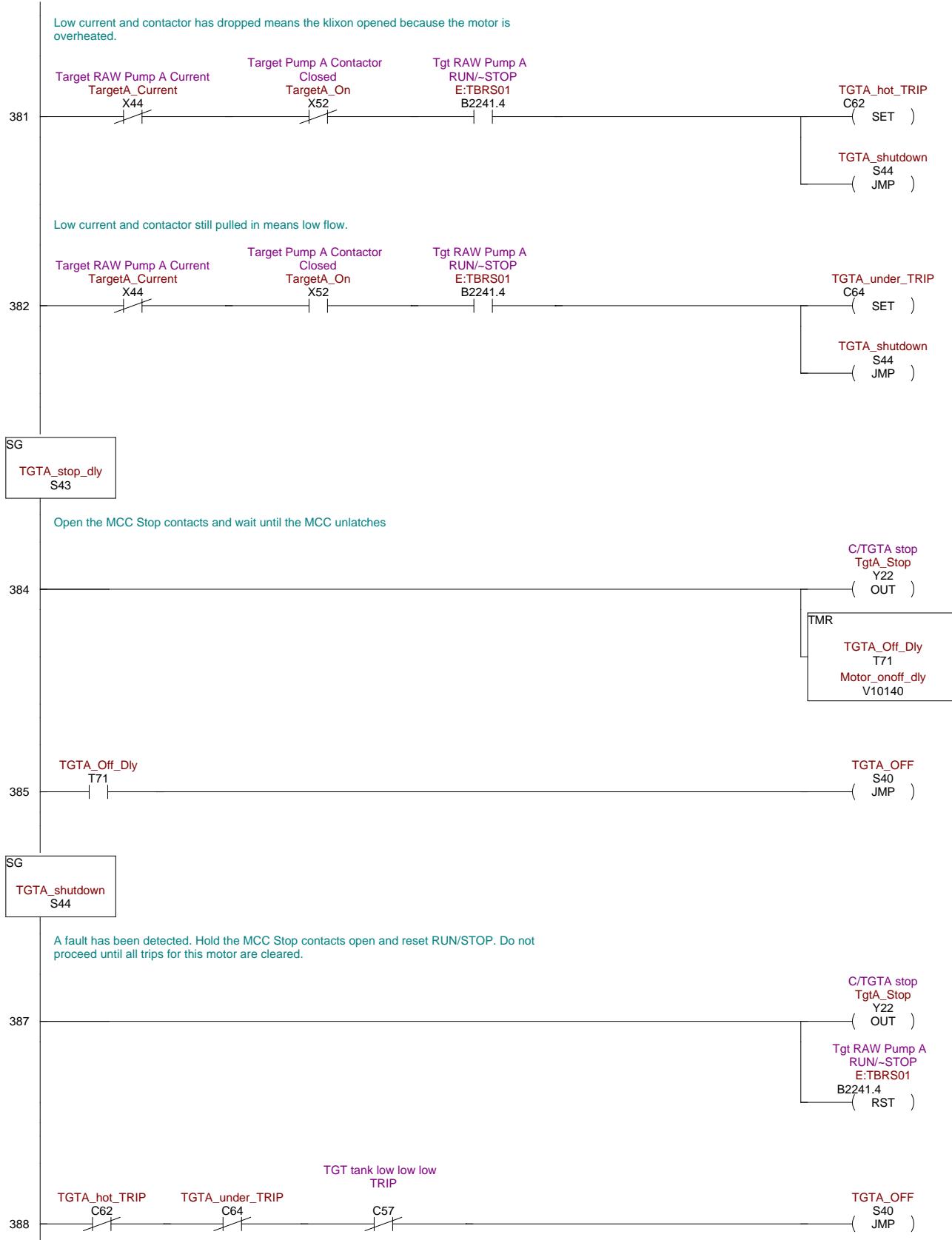


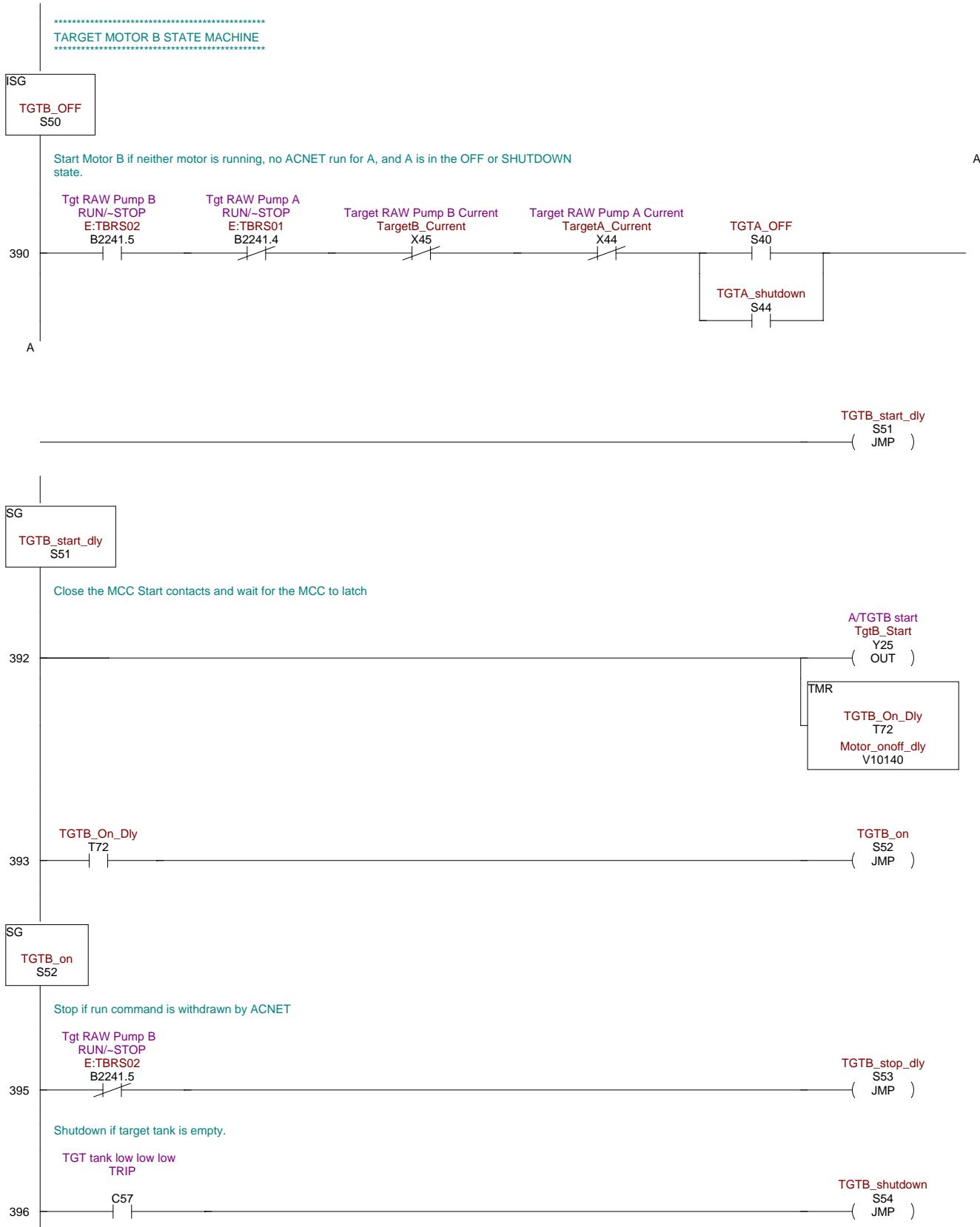


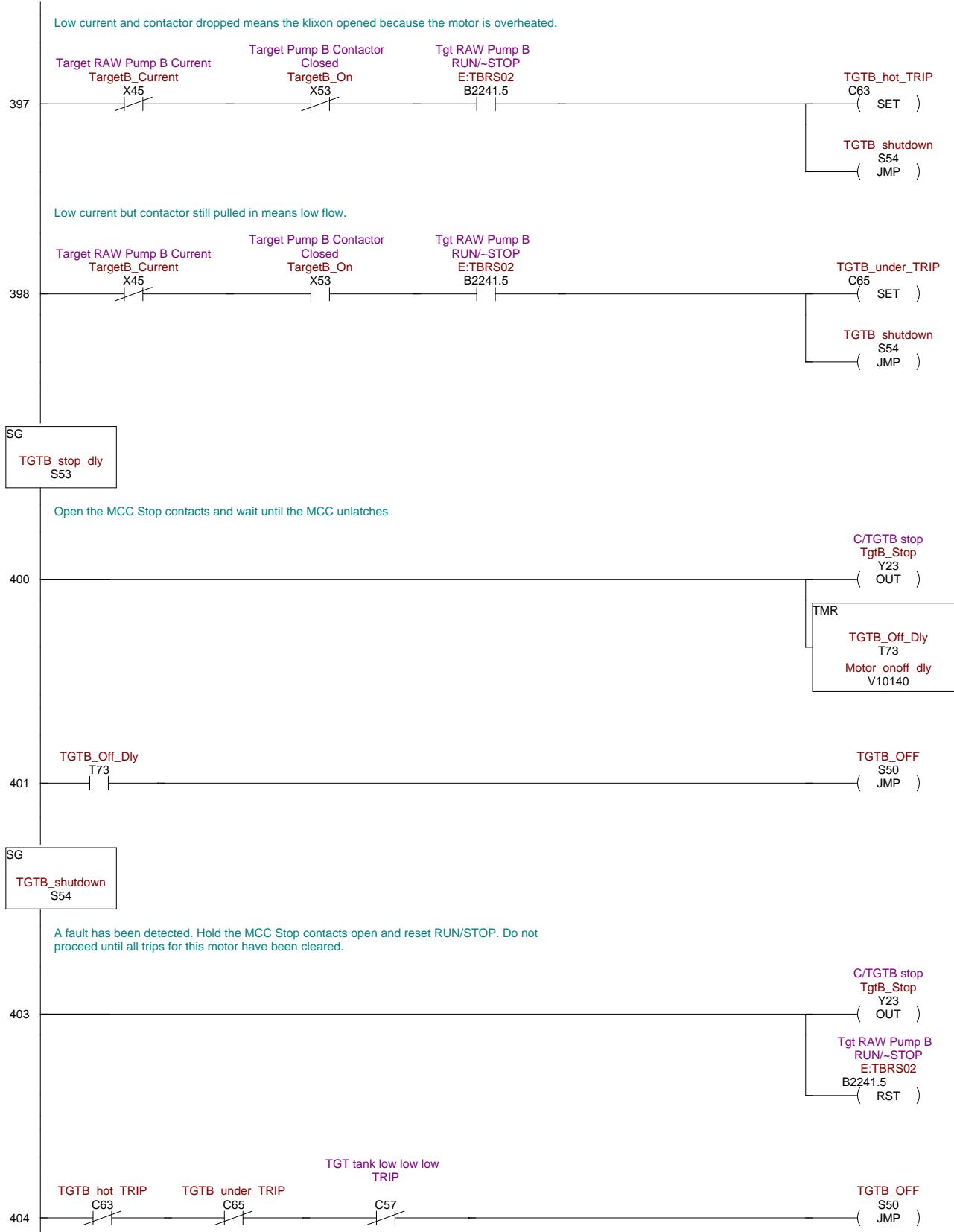


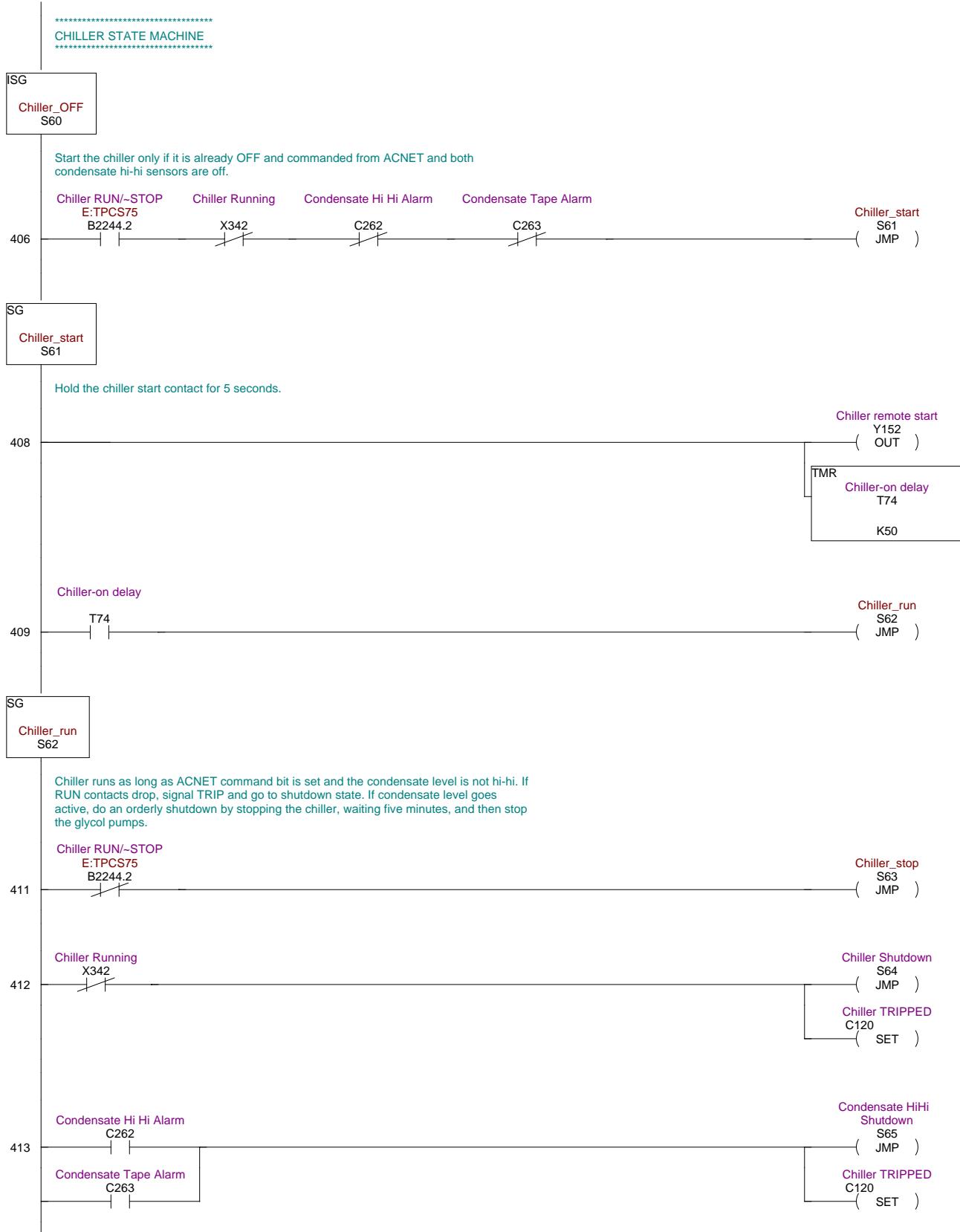


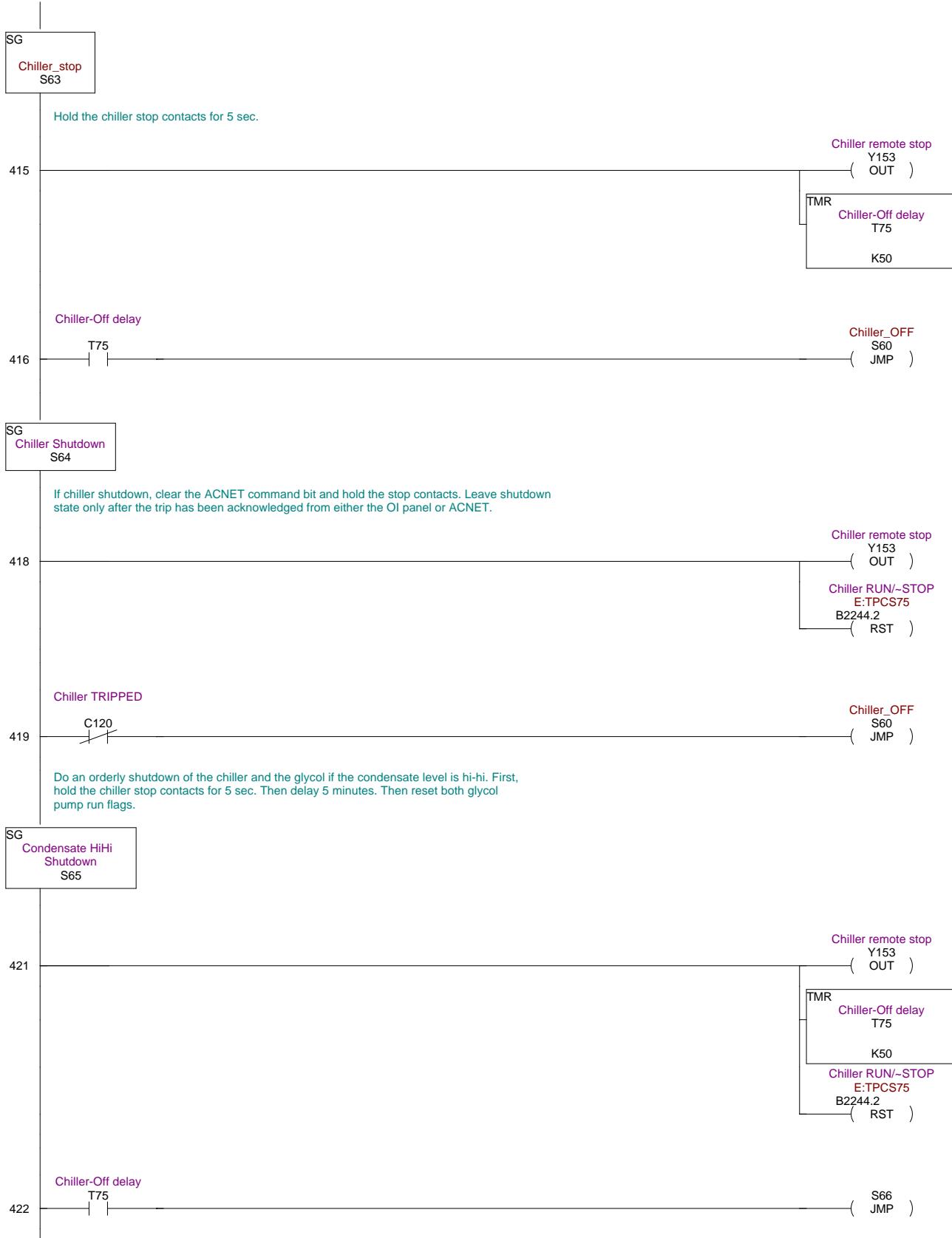












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